

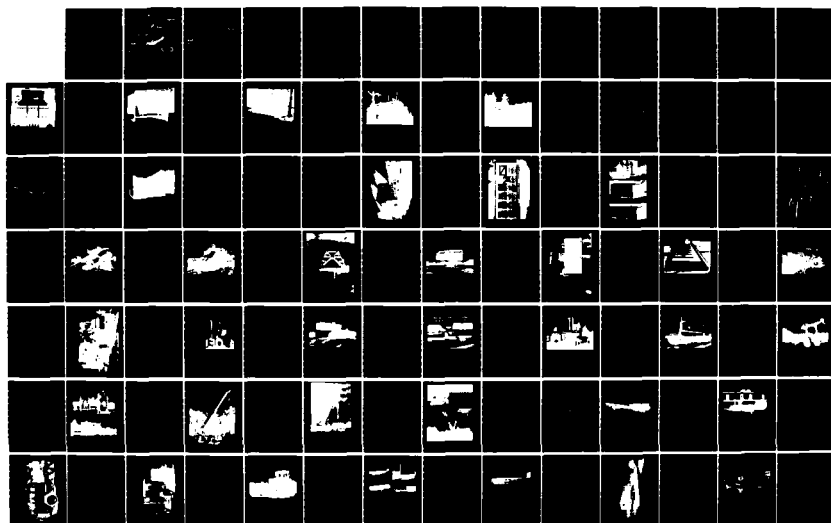
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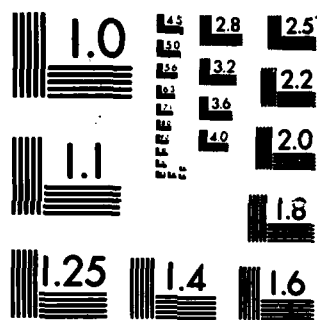
CONTAINER SYSTEM HARDWARE STATUS REPORT(U) ARMY BELVOIR 1/2
RESEARCH AND DEVELOPMENT CENTER FORT BELVOIR VA
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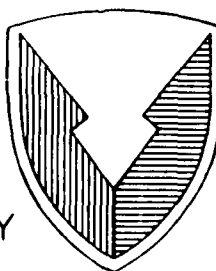
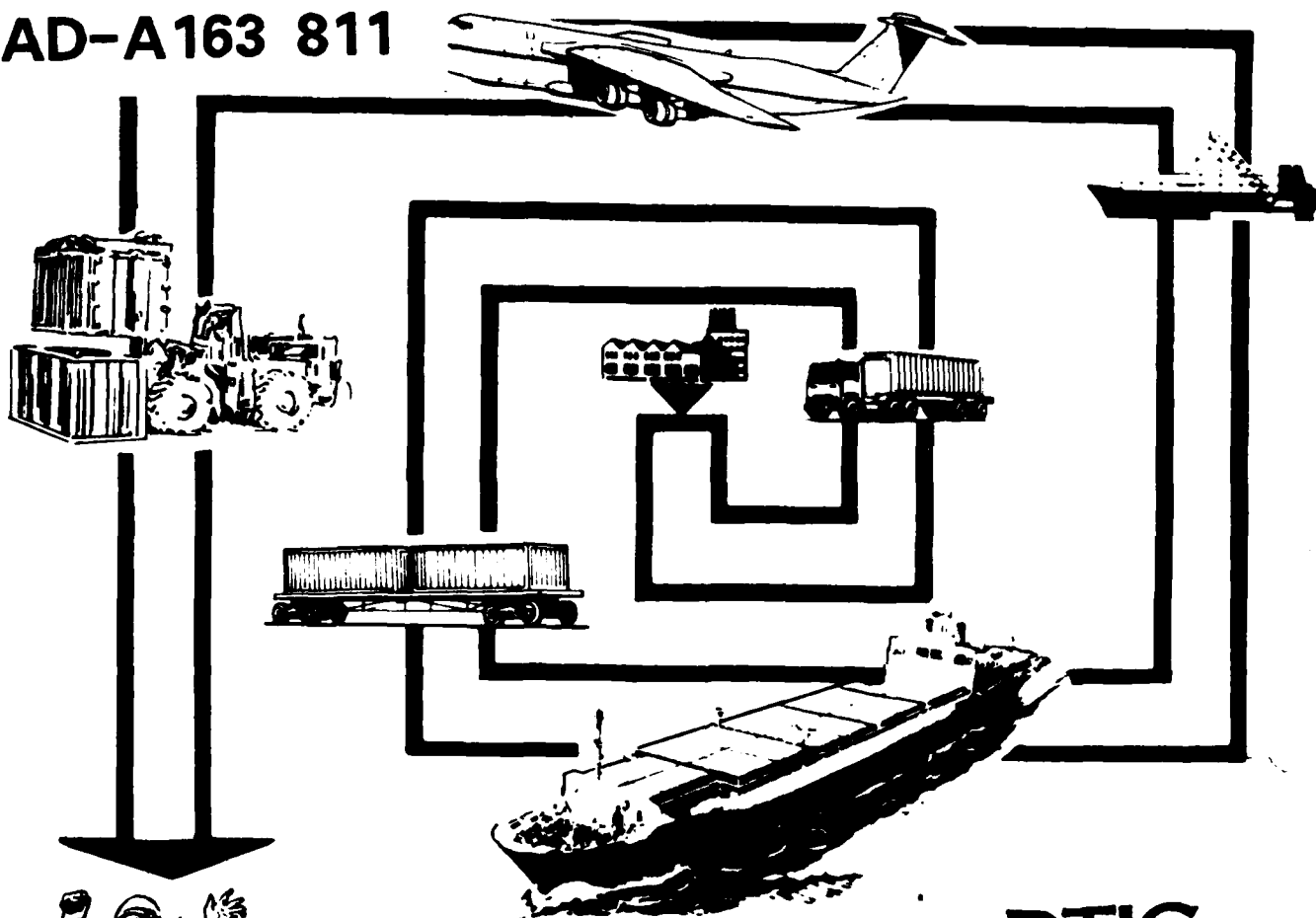
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US ARMY
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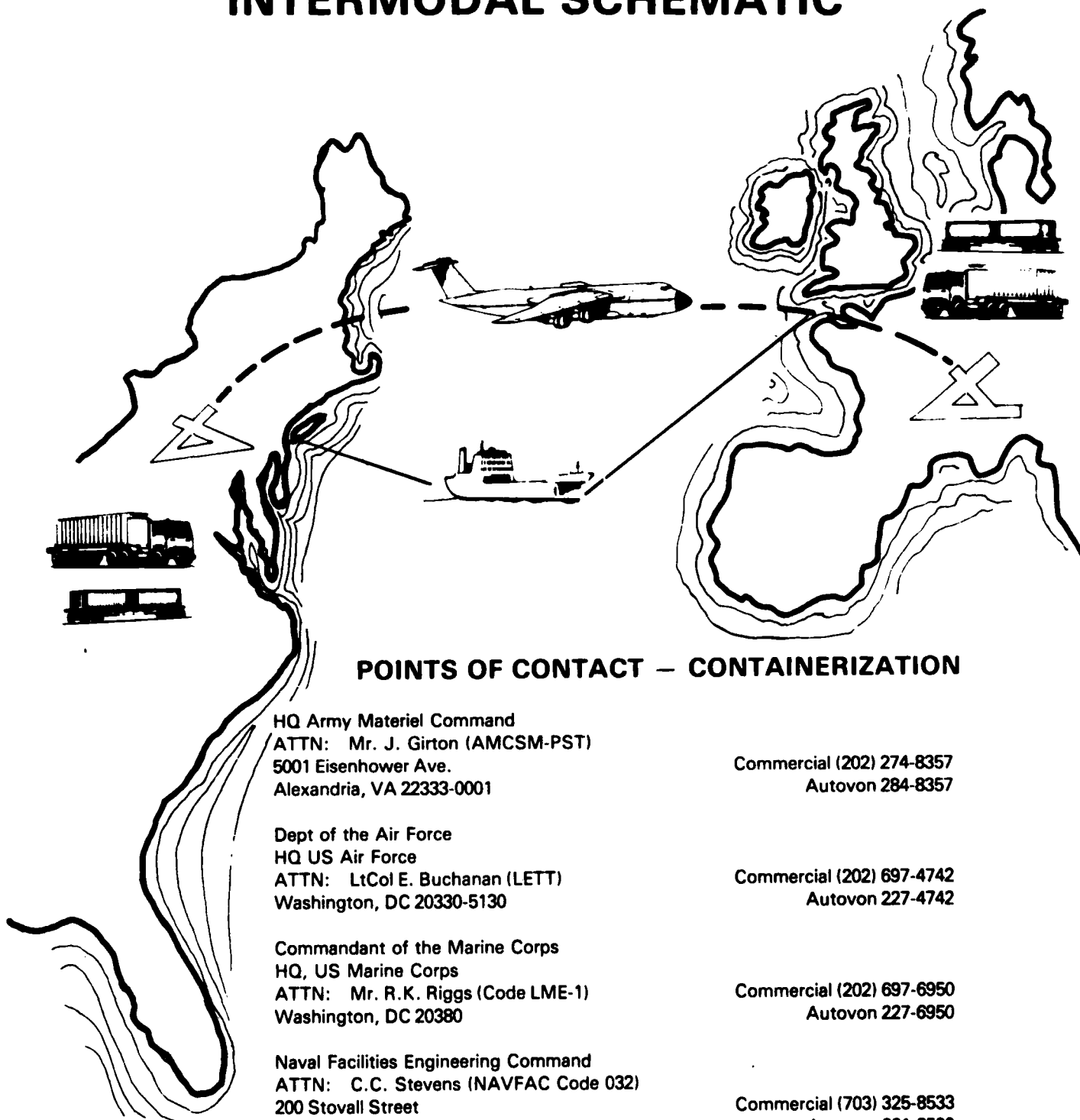
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CONTAINER SYSTEM HARDWARE STATUS REPORT

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JANUARY 1985 86 1 22 082

INTERMODAL SCHEMATIC



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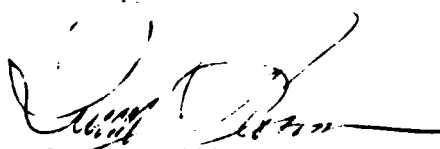
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FOREWORD

Future contingencies will require heavy reliance on the use of containers for the shipment of all commodities. Over the past two decades, the shift by the Merchant Marine industry from the breakbulk fleet to containerships has compelled the Department of Defense to examine its programs to support deployed forces and projected contingencies. In order to report on the status of programs associated with containerization, the publication of this report was initiated by the former Office of the Project Manager, Army Container Oriented Distribution System to provide information to various Army activities involved or having an interest in the development and fielding of the Container Oriented Distribution System. In response to the request of the Joint Intermodal Steering Group (formerly the Joint Container Steering Group) the status of systems hardware items of the Departments of the Navy and Air Force have been included in this publication beginning with the Jan 79 issue. In Nov 81, publication responsibility was transferred to the US Army Mobility Equipment Research and Development Command as a function of its development responsibilities in the Container Oriented Distribution System. Subsequent to the Jan 82 edition of the Container System Hardware Status Report, the Department of Defense directed that the report be published in accordance with Department of Defense Directive 5000.11 and with the Department of Defense Project Master Plan for a Container Oriented Distribution System. In the 1983 edition, material was organized by categories of utilization rather than by service application. In addition, a section was added to report on the number of ISO shelters in the military logistics system.

Belvoir R&D Center Technical Coordinator for this publication is Mr. Irwin Rosen, and the Editor is Mr. Stephen Johnson, Autovon 354-4490/Commercial (703)664-4490. User comments may be submitted to US Army Belvoir R&D Center, ATTN: STRBE-GMW, Fort Belvoir, VA 22060-5606 or to the appropriate service point of contact listed on the inside of the front cover.



IRWIN S. ROSEN
Technical Coordinator
Logistics Support Laboratory
Belvoir Research & Development Center

SIGNIFICANT ACTIVITIES WHICH OCCURRED DURING THE PERIOD JANUARY-DECEMBER 1984:

- o Initiated Value Engineering Study to examine the use of direct drive diesel units on refrigerated containers.
- o Awarded contract for 223 40-ft special purpose flatracks. First Article has received ABS certification.
- o Started deliveries of 8-ft x 8-ft x 20-ft shipping frames to Marine Corps.
- o Approval for service use by Marine Corps obtained and production option exercised for the Quadruple Container (QUADCON).
- o Fifty Palletized Loading System (PLS) containers purchased for the Army Development and Employment Agency (ADEA).
- o Awarded First Production Contract for 762 ISO shelters.
- o The Prestaged Ammunition Loading System (PALS) program terminated when the user requirement was withdrawn.
- o Operational and Organizational evaluations conducted for three heavy Palletized Loading System units by ADEA and the 9th ID.
- o Conducted conceptual design and operational evaluations of the Lightweight Expandable Spreader Bar.
- o Production and deliveries of 1,914 4K Rough Terrain Forklift Trucks (RTFLT) was completed.
- o The 6K Variable Reach Rough Terrain Forklift Truck was approved for production by the Army and an Acquisition Plan was prepared.
- o Procurement and production of the 50K Rough Terrain Container Handler was completed with final fielding scheduled for 2QFY85.

SIGNIFICANT ACTIVITIES WHICH OCCURRED DURING THE PERIOD JANUARY-DECEMBER 1984:

- o Draft Requirements Document for the Rough Terrain Container Crane circulated and is awaiting final approval.
- o The Rider Block Tagline System installed on a 250-ton crane was tested during a J-LOTS exercise.
- o Continued Initial Production Testing of the Logistics Vehicle System.
- o Initiated four year overhaul program for 700 coupleable chassis MILVAN Transporters.
- o Completed deployment of M915A1 Truck Tractors to Medium Transportation Companies of the USAREUR, Army Reserve and Army National Guard.
- o Completed procurement of M872 series linehaul semitrailers.
- o Determined that a modified air cushion barge configuration is the optimum candidate for satisfying the Army's requirement for a Heavy Lift Lighter Amphibian.
- o Cancelled program for the Rapidly Deployable Knockdown Barge.
- o The Temporary Container Discharge Facility was fitted with an overseas transport securing system and a Rider Block Tagline System. Both systems were successfully tested during J-LOTS exercises.
- o Conversion of the first four of eight Fast Logistic Ship Program (T-AKR) containerships was completed. Deliveries of SEASHEDS and Flatracks to the eight T-AKR ships were completed.
- o The first Auxilliary Crane Ship (T-ACS) was delivered and demonstrated during a J-LOTS exercise. Conversion of a second ship has started.
- o Government baseline design prepared for the Containership Stikeup System.
- o Approval granted for full production of the Side-Loadable Warping Tug.
- o Two Cantilever Lift Beams were procured and tested.

3



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SIGNIFICANT ACTIVITIES WHICH OCCURRED DURING THE PERIOD JANUARY-DECEMBER 1984:

- o Three 50K RTCHs were procured for use by SAC on Guam.
- o Two container sideloaders were delivered to USAFE.
- o 22/33K forklifts were approved for use by the Tactical Air Forces to handle tactical shelters.
- o The prototype of the "SUPER JACK" Mobile Loading System failed during static testing. The system was redesigned.
- o FY85 funding became available to conduct research and development on the "SUPER PALLET" ISO/463L Adapter Pallet.
- o FY85 funding also became available to procure six container sideloaders for USAFE and thirteen pieces of container handling equipment for MAC.
- o The ISO standard for air/land containers was withdrawn prior to the approval of the new standard for air/surface containers. This action delayed the procurement of MAC intermodal air containers.
- o Flatrack munitions test shipment to Europe delayed awaiting German Railway approvals.
- o Use of side opening containers for munitions shipment and storage approved.
- o Funding made available to allow MAC to lease lightweight surface containers or air/land containers for use in the airlift system.
- o Started the concept exploration phase and circulated the operational and organizational plan for the Rough Terrain Container Straddle Truck.
- o The RO/RO offloading facility was approved for full Navy production.

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Partial

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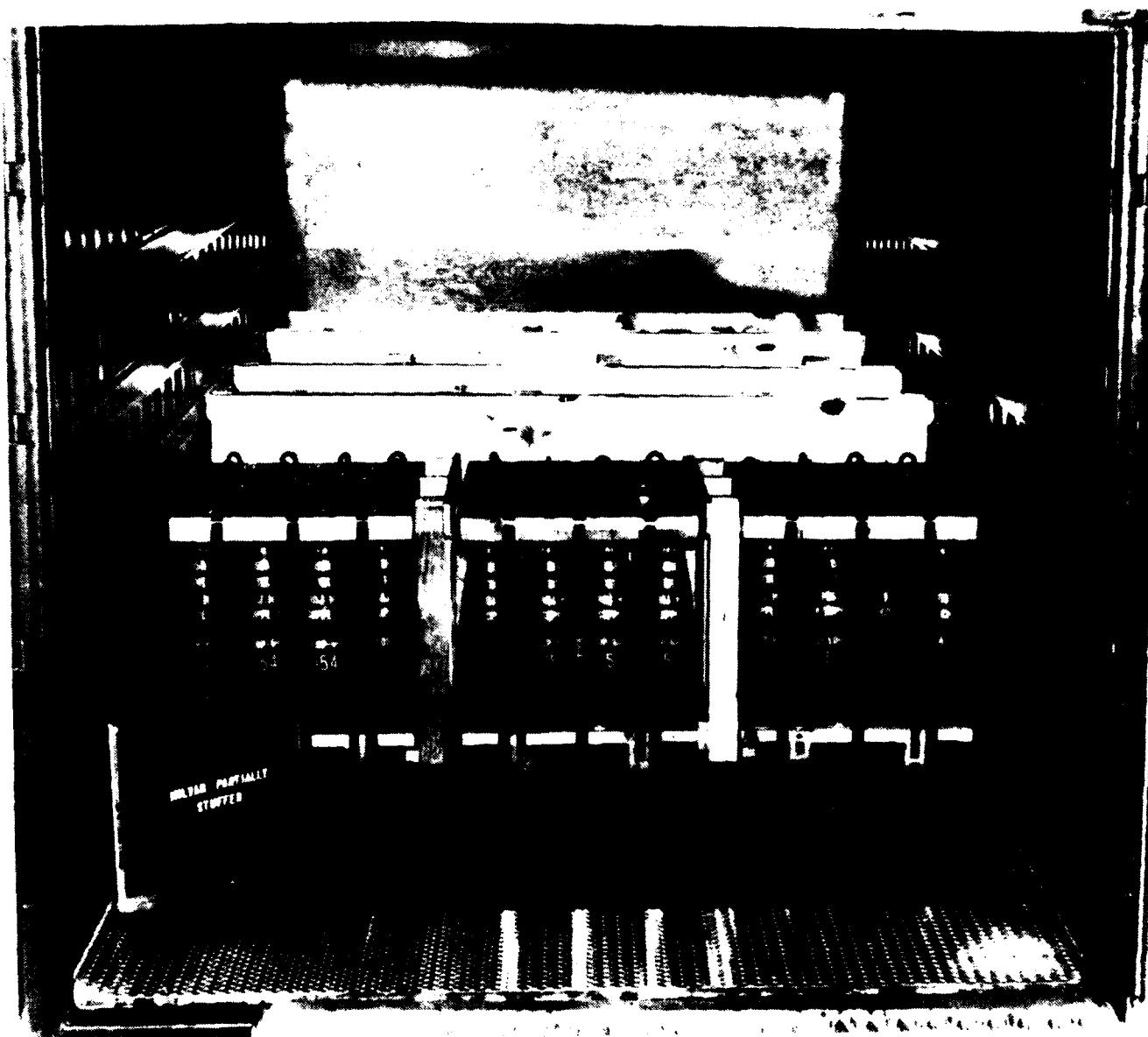
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CONTAINER EQUIPMENT



LENGTH: 20 FT.

HEIGHT: 8 FT.

GROSS WEIGHT (DESIGNED): 44,800 LBS.

WIDTH: 8 FT.

WEIGHT EMPTY: 5,785 LBS.

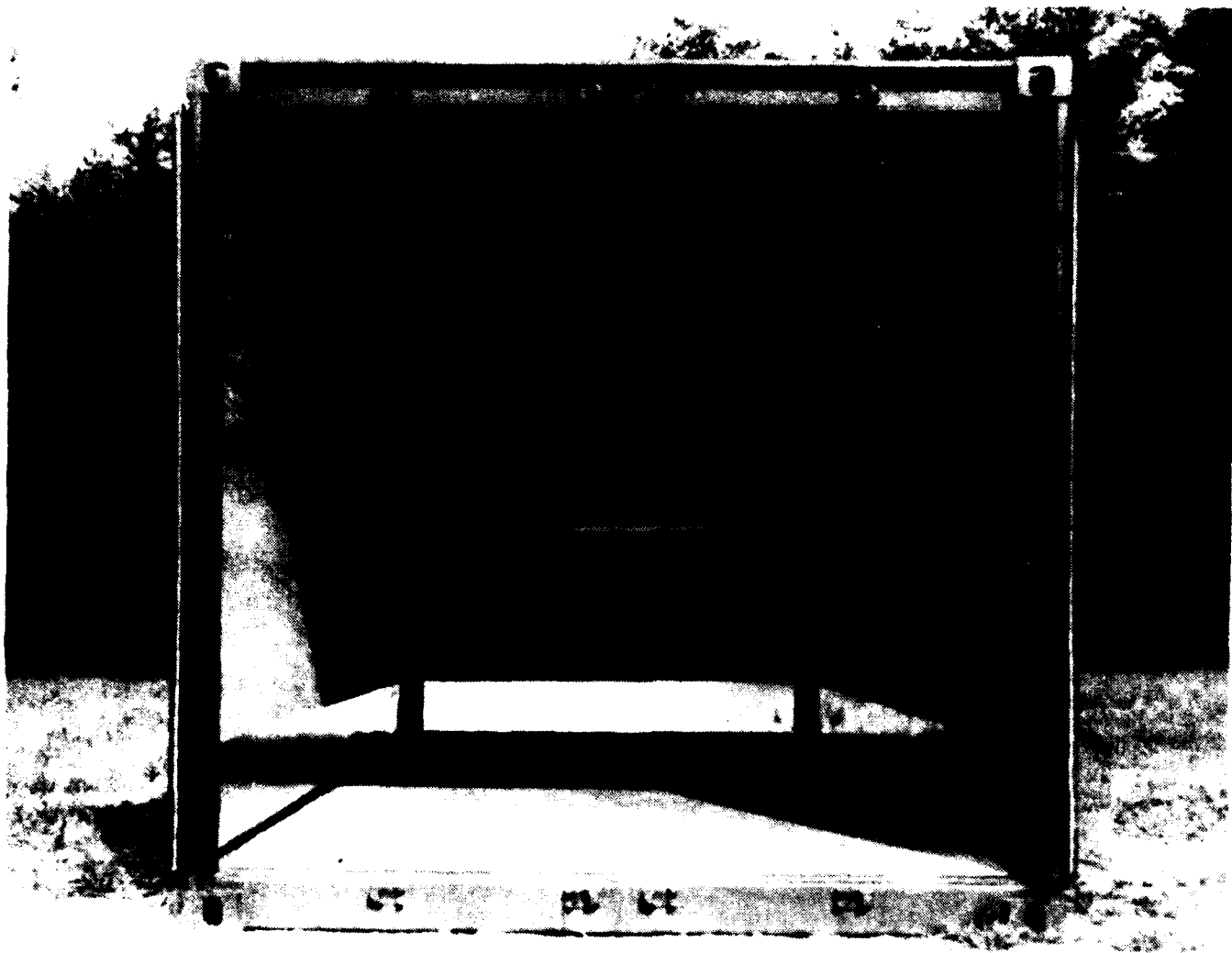
Title: MILVAN - Ammunition Restraint

Point of Contact: LaChance, R., Mr., US Army Belvoir R&D Center,
STRBE-GMM, Fort Belvoir, VA 22060-5606,
Autovon 354-5581/Commercial (703)664-5581

Item Description: The MILVAN ammunition restraint container is essentially a standard ANSI/ISO container equipped with restraint hardware capable of handling approximately 20 tons of ammunition. The restraint system consists of eight slotted steel rails permanently installed on each side wall and 25 adjustable cross bars that can be inserted in the slotted rails. The restraint system was provided by the Aeroquip Corp. Its use at full rated load has been approved by the US Coast Guard and the Association of American Railroads. Other restraint systems also approved for use in the MILVAN are those developed by Evans Corp. and Kinedyne Corp. The MILVAN container is 8 x 8 x 20-ft, weighs 5,785 lbs including 1,300 lbs for the restraint system.

Status: The Army procured 4,500 MILVAN ammunition restraint containers of which approximately 4,000 remain in the inventory. The specification, MIL-C-52661, was recently updated to include the 8'6" height which is now ISO standard, and composite flooring.

Program Plan: FY85 procurement is on schedule for 249 MILVAN Ammunition Restraint Containers. 578 containers are scheduled for procurement in FY86.



LENGTH: 20 FT.

HEIGHT: 8 FT.

WEIGHT EMPTY: 4,700 LBS.

WIDTH: 8 FT.

VOLUME INSIDE: 1,060 CU. FT.

GROSS WEIGHT: 44,800 LBS.

Title: MILVAN - General Cargo

Point of Contact: LaChance, R., Mr., US Army Belvoir R&D Center,
STRBE-GMM, Fort Belvoir, VA 22060-5606,
Autovon 354-5581/Commercial (703)664-5581

Item Description: The MILVAN provides a capability of handling up to 20-tons of general cargo. It is used to transport and temporarily store military cargo. The MILVAN dimensions are 8-ft W x 8-ft H x 20-ft L. It weighs 4,770 lbs when empty and has an internal volume of 1,060 cu ft. The MILVAN is designed to ANSI/ISO standards and procured with a military performance specification. The container is of steel construction with hardwood flooring and the walls are lined with plywood.

Status: The Army procured 2,200 MILVAN general cargo containers and there are 1,559 in the present inventory. The International Convention for Safe Containers (CSC) was ratified by the United States 3 Jan 78. The US Coast Guard, as the implementing agency, has issued approval to the Army for the existing MILVAN fleet 9 Nov 78. Action has been initiated to have the CSC approval plate mounted on the containers during the current refurbishment program. The convention requires reexamination of the containers at 24 month intervals after initial approval. Contracts were awarded beginning in 1978 to refurbish the container inventory and, with depot participation, refurbishment has been completed.

Program Plan: Procurement was completed. There is no current plan to procure additional quantities; however, additional ammunition restraint containers are scheduled for FY85 and FY86 procurements.



LENGTH: 20 FT.

HEIGHT: 8 FT.

DOOR OPENING WIDTH: 89 IN.

WIDTH: 8 FT.

DOOR OPENING HEIGHT: 82 IN.

WEIGHT: 8,500 LBS.

Title: Refrigerated Container

Point of Contact: LaChance, R., Mr., US Army Belvoir R&D Center,
STRBE-GMM, Fort Belvoir, VA 22060-5606,
Autovon 354-5581/Commercial (703)664-5581

Item Description: The refrigerated container provides a capability to transport, temporarily store, and distribute temperature sensitive cargo. The container including the refrigeration unit is nominally 8 x 8 x 20-ft and weighs approximately 8,000 lbs. The unit is powered by a military Standard 10kw diesel engine generator set or by an external electrical power supply. The refrigerated container is a modified commercial design and procured to a military specification. It meets all ISO requirements for intermodal shipments.

Status: A total of 665 containers, of which 24 went to the US Navy, were purchased and delivered by 1980. Approximately 225 have been deployed to Europe where they see constant use. In FY85 a value engineering study was contracted to examine the use of a commercial direct drive diesel refrigeration unit. If implemented, the specification will be updated in FY86.

Program Plan: The US Navy is procuring 49 units in FY85. The US Army is scheduled to procure 268 units in FY90.



Title: 20-Ft ISO Flatrack, Project EASY ISO

Point of Contact: Barr, S., Capt, Armament Div/YNP, Eglin AFB, FL
32542-5000, Autovon 872-4173/Commerical (904)882-4173

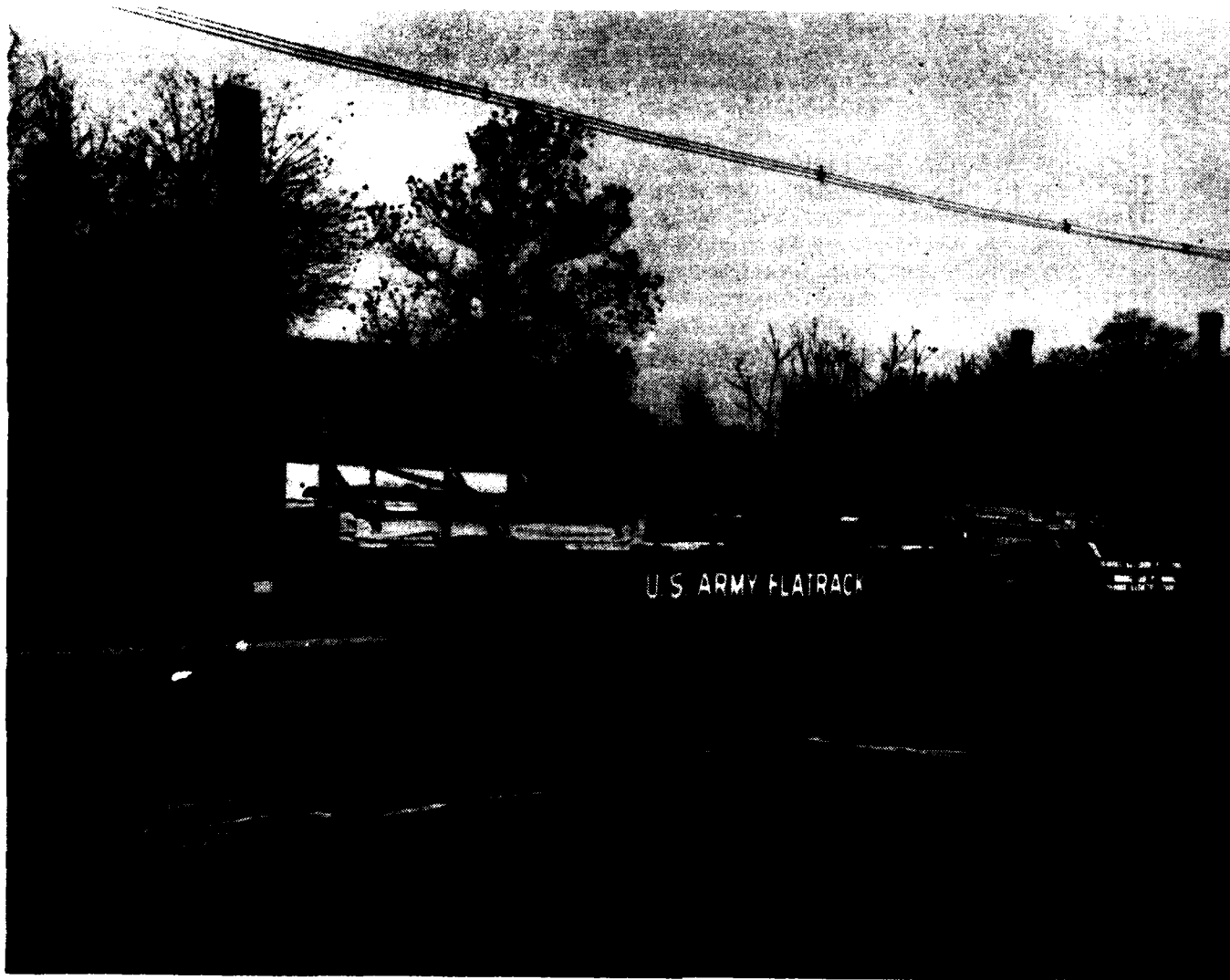
Item Description: Evaluation of ISO flatrack containers for transport of munitions by DOD. Expected increased utility in loading and downloading, use of existing munitions handling equipment and reduced cost for retrograde shipping.

Status: In Mar 83, the Air Force Armament Division at Eglin AFB, FL gained US Coast Guard (USCG) and Bureau of Explosives (BOE) approval for load plan drawings of 30mm ammunition loaded on a 20-ft x 8-ft x 5-ft 8-in flatrack. The loaded flatrack was successfully shipped to Korea in Jun 83. This shipment confirmed the flatrack advantages of effective cube utilization and ease of unloading with conventional MHE.

Also, in Mar 83, HQ FACAf completed the static test loading of 11 different air munitions loads on a 20-ft x 8-ft x 8-ft flatrack. Drawings for these load configurations will be submitted to the USCG and BOE for approval.

A test shipment to Europe using 25 MILVANS and 25 ISO flatracks is planned for the third quarter 1985. Currently we are awaiting approval from Federal Republic of Germany (FRG) to ship tarp covered munitions on flatracks in their country. An 8-ft flatrack has been sent to the FRG for testing. In addition, a 4-ft flatrack has been sent to USADAC&S at Savannah for testing of selected munitions loads. A market survey is underway to lease 25 flatracks for the test.

Program Plan: Evaluate the results of the test shipment to Europe. Advertise the benefits of using the ISO flatrack for munitions shipments promoting increased usage. Lessons learned from the test will guide future Air Force use of flatracks for munitions shipments.



LENGTH: 40 FT.
HEIGHT: 9 FT. 6 IN.

WIDTH: 8 FT.
COLLAPSED HEIGHT: 3 FT. 2 IN.

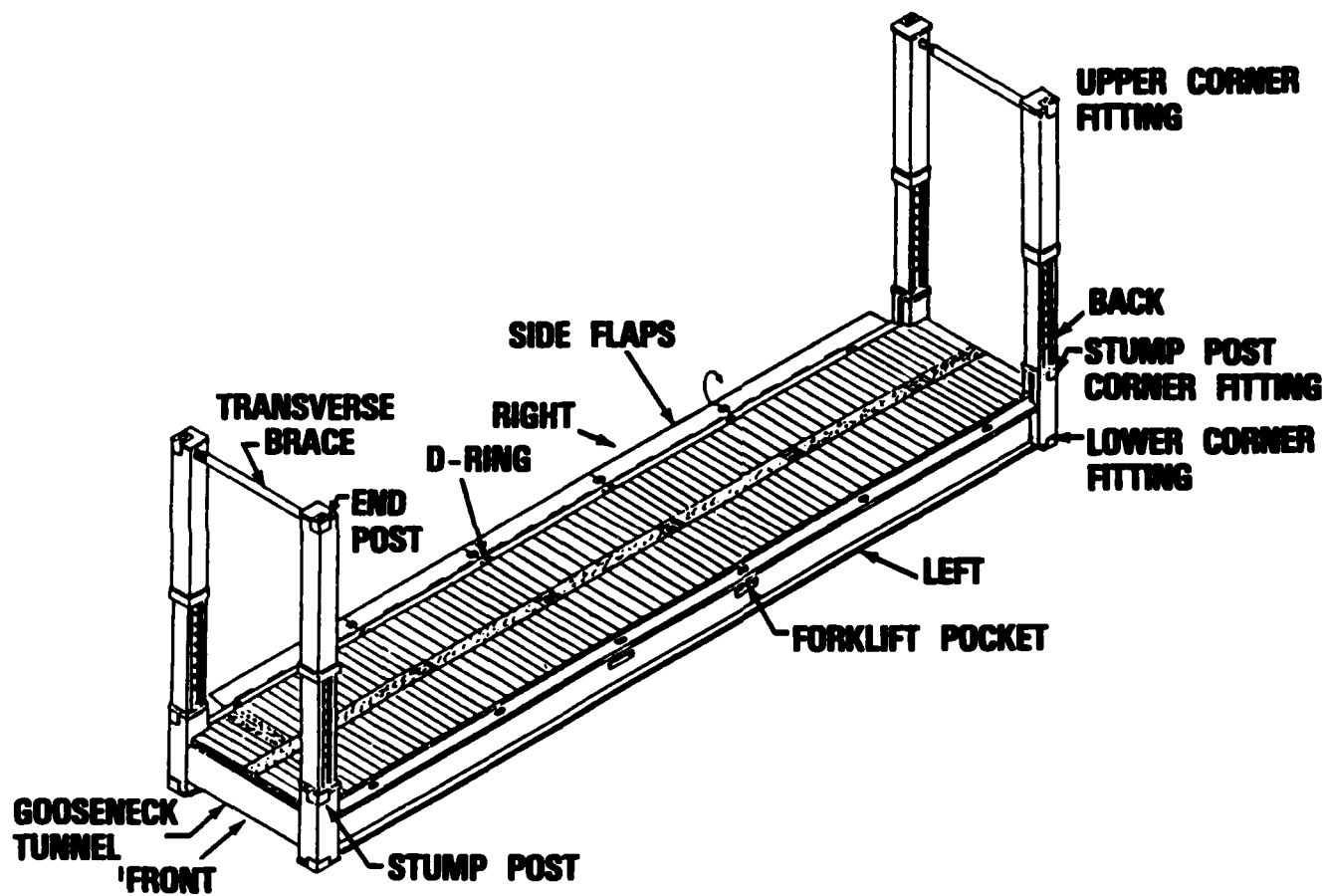
Title: 40-Ft Flatrack

Point of Contact: LaChance, R., Mr., US Army Belvoir R&D Center,
STRBE-GMM, Fort Belvoir, VA 22060-5606,
Autovon 354-5581/Commercial (703)664-5581

Item Description: The 40-ft ISO Flatrack will have collapsible endwalls, a tiedown system, and adjustable corner posts. Other design features include storage compartments for chains, fold out bolsters (for 'tween decks use) and a drive-on/off ramp in the endwall. The design will incorporate new corrosion resisting paints and composite floor boards for extended life and increased durability.

Status: Six prototypes were procured and tested between 1975 and 1980. Operational testing was completed and a final report was published. It was planned to award a production contract in FY82, but in July 1981 the Department of the Army directed that the development be stopped. It had been determined that suitable quantities were available from commercial lessors. Recent information indicates that this is no longer true, and the US Navy and the Department of the Army have confirmed this.

Program Plan: Based on a DA directive to utilize commercially available flatracks, development action was terminated. It has been indicated by DA that a sizeable quantity will be purchased in the next 10 years to support deployment plans.



SPECIAL PURPOSE 40' HEAVY DUTY FLATRACK

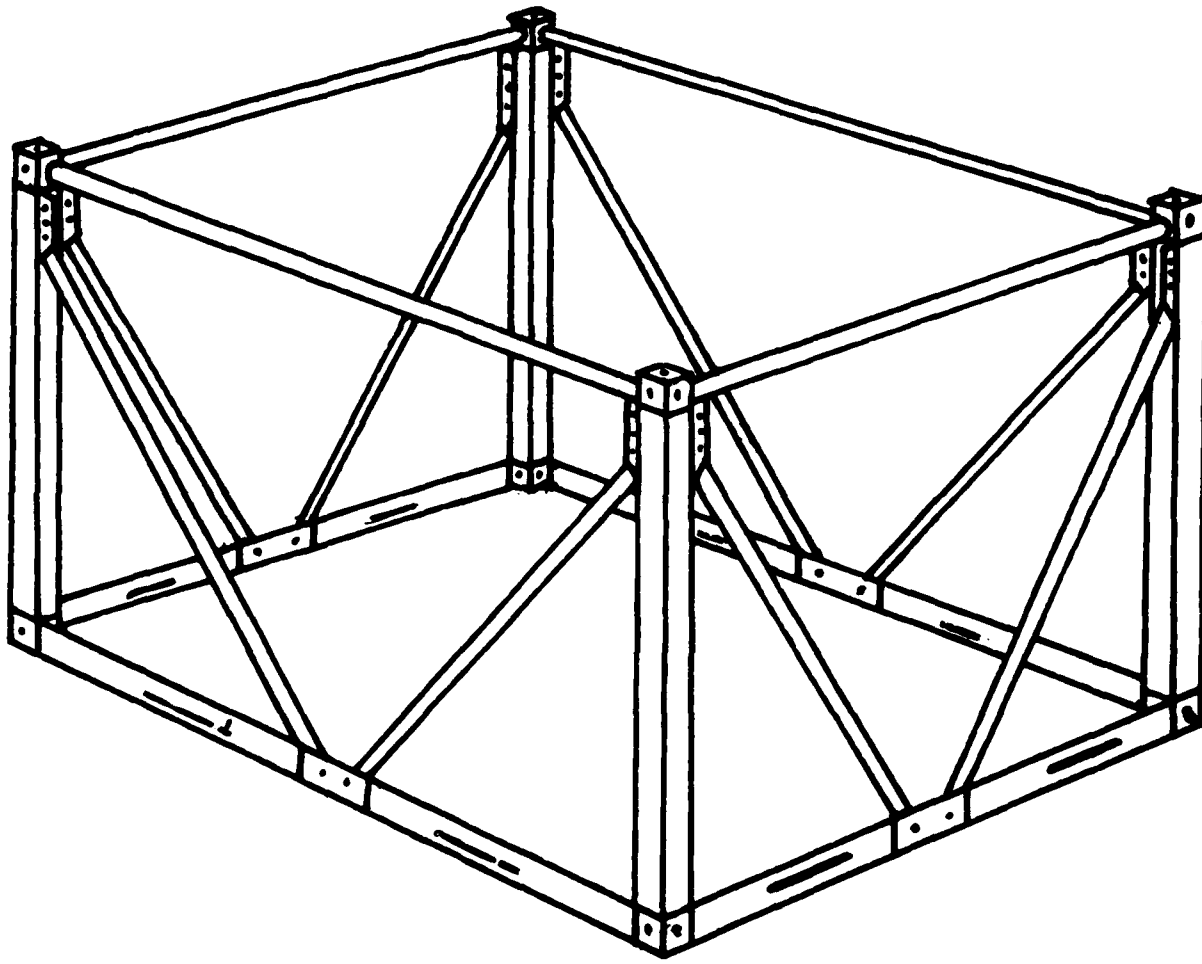
Title: 40-Ft Special Purpose Flatrack

Point of Contact: Shen, M., Mr., Naval Sea Systems Command
(PMS-377K2) Washington, DC 20362
Autovon 222-8517/Commercial (202)692-8517

Item Description: The 40-ft special purpose flatrack was developed to provide a breakbulk capability to container ships for the carriage of tanks, and other heavy and/or oversized cargo. The 40-ft special purpose flatrack is a heavy structural steel frame, decked over and fitted with tiedown points. It has a weight handling capability of 60 LT and telescoping corner posts adjustable from 8.5 to 13-ft for various cargo heights. The corner posts fold down to facilitate stacking and storage. The flatracks are to be inserted into the container cell empty and then loaded out.

Status: A contract for the first year's procurement of 223 units was awarded 5 June 1984. First article has received ABS certification. The last of the production is scheduled for delivery in June 1985.

Program Plan: Future procurement quantities have not yet been identified.



LENGTH — 10 FT.

HEIGHT — 8 FT.

WIDTH — 8 FT.

ARRAYED CONFIGURATION — 8 FT. x 8 FT. x 20 FT.

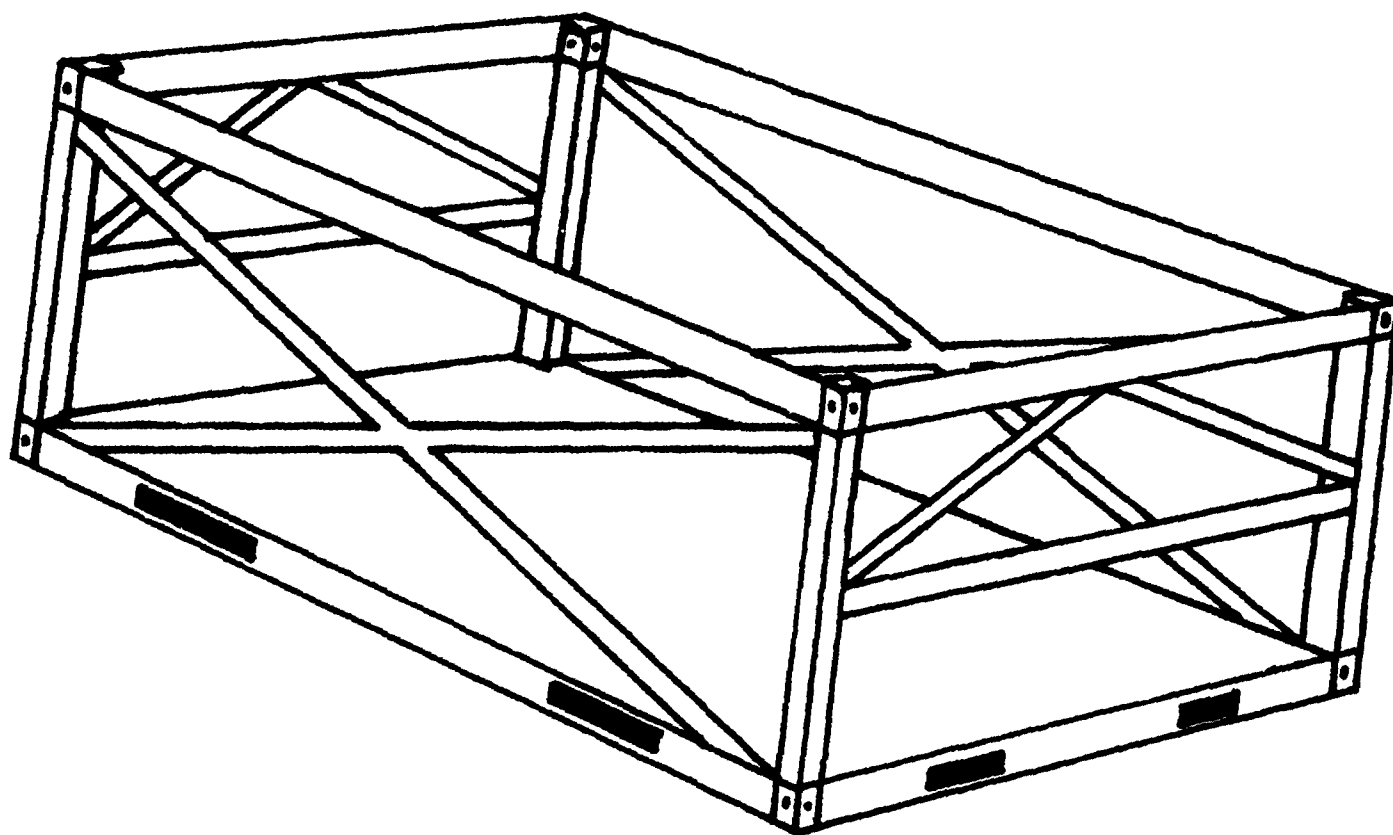
Title: Shipping Frame, 8-ft x 8-ft x 10-ft

Point of Contact: Womble, M., Ms., HQ US Marine Corps/LME-4,
Washington, DC 20380, Autovon 225-3072/
Commercial (202)695-3072

Item Description: This item is an open top cargo carrier of steel construction which features a four-way forklift handling capability and standard ISO corner fittings. An array of two frames forms an 8-ft x 8-ft x 20-ft configuration and fits the 20-ft cells of a containership. The frame will be used to support the mounting and movement of the reverse osmosis water purification unit.

Status: Approval for service use was obtained in May 1981. An Army contract was awarded on 30 Sep 1983 for the procurement of 496 frames. Deliveries commenced in Aug 1984 and will continue through July 1986.

Program Plan: A follow-on contract will be awarded during FY85 for 335 frames which will satisfy Marine Corps requirements.



LENGTH — 6½ FT.

HEIGHT — 4 FT.

WIDTH — 8 FT.

ARRAYED CONFIGURATION — 8 FT. x 8 FT. x 20 FT.

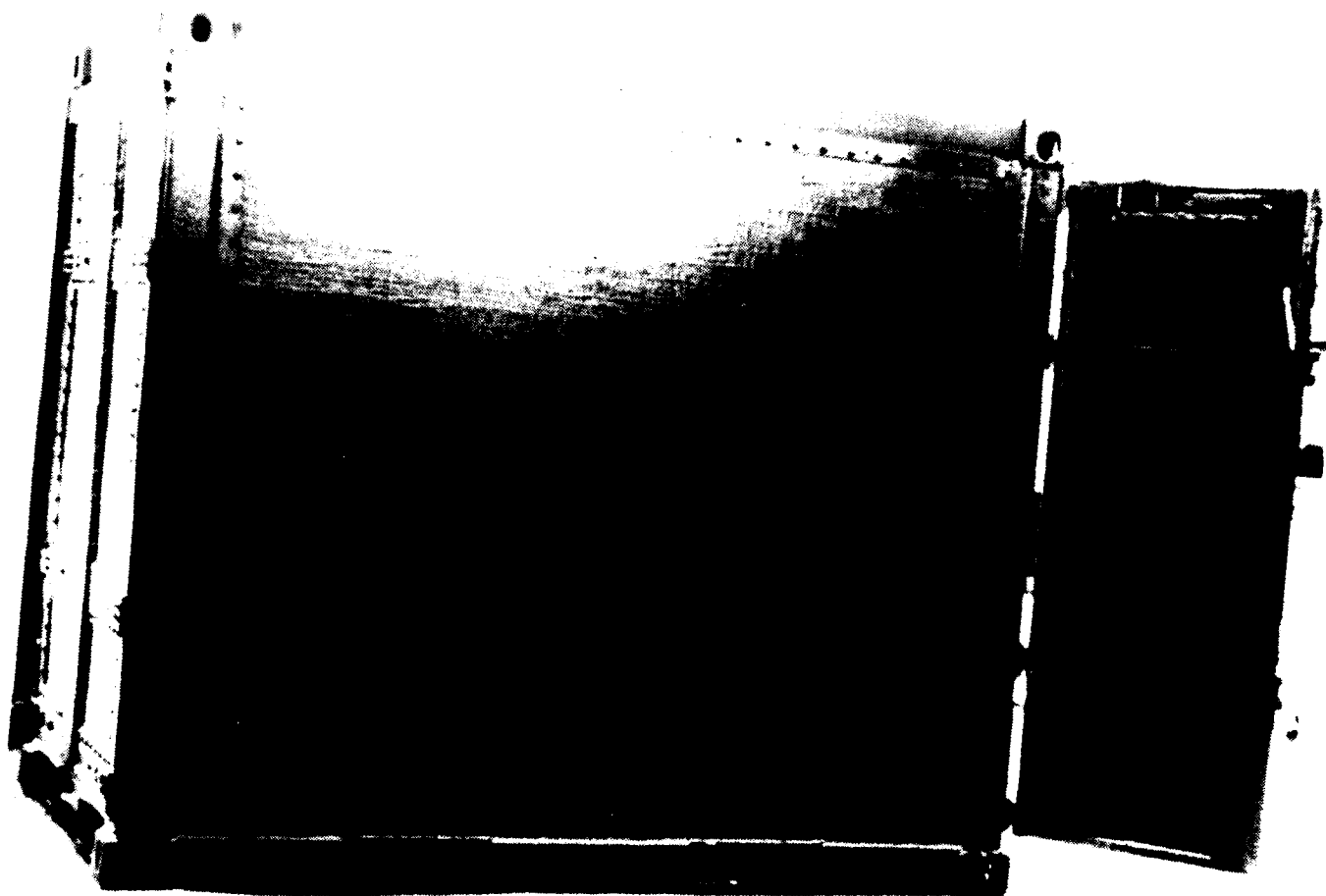
Title: Shipping Frame, 4-ft x 6-2/3-ft x 8-ft

Point of Contact: Crivello, J., Mr., HQ US Marine Corps/(Code LME-4)
Washington, DC 20380, Autovon 225-3072/Commercial
(202)695-3072

Item Description: Reusable open top cargo carrier with four way forklift handling capability with ISO standard corner fittings. Can be arrayed up to six, forming an 8-ft x 8-ft x 20-ft configuration to fit the cell of a containership. Capability objective is to provide an open container of intermediate size which is compatible with US Navy amphibious ships and the Merchant Fleet. Will house fuel and water pump and storage equipment, general cargo, and organizational property.

Status: Procurement quantities, final testing, and fielding dates have yet to be determined.

Program Plan: To be determined.



LENGTH: 96 IN.
HEIGHT: 82 IN.

QUADCON (QUADRUPLE CONTAINER)

WIDTH: 57½ IN.
CARGO CAP: 7500 LBS.

Title: QUADCON (Quadruple Container)

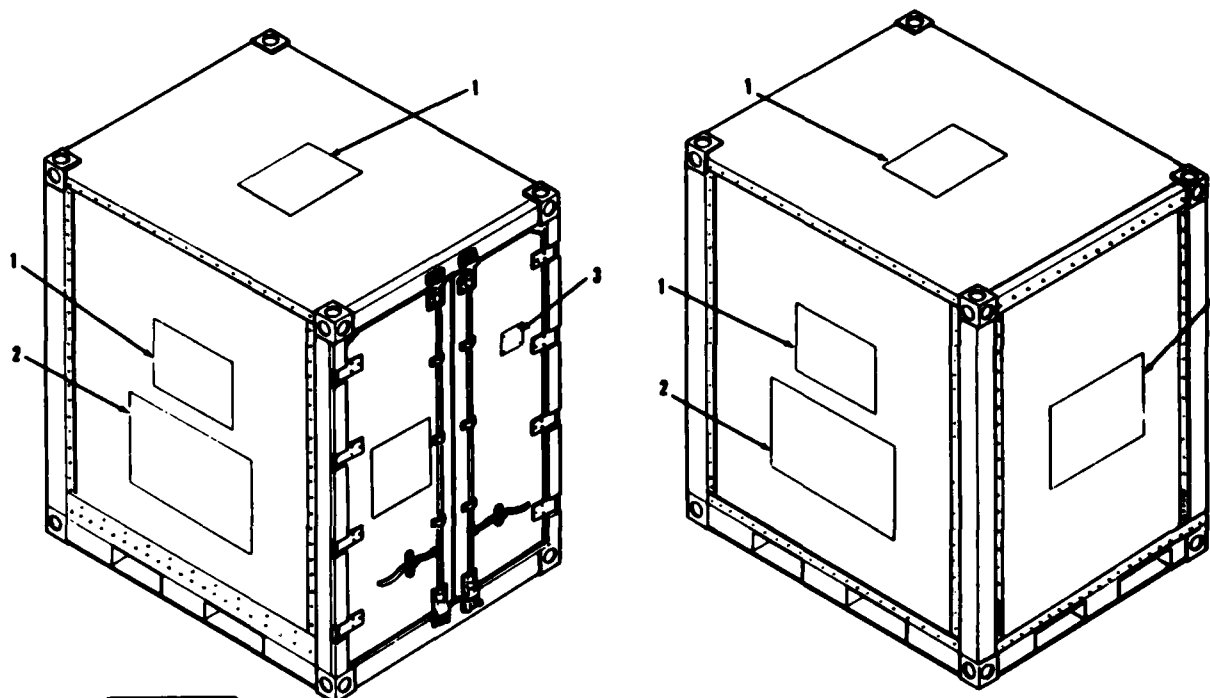
Point of Contact: Womble, M., Ms., HQ US Marine Corps/LME-4, Washington,
DC 20380, Autovon 225-3072/Commercial (202)695-3072

Item Description: The QUADCON is an 82-in x 57.5-in x 96-in lockable, weatherproof, reusable, prefabricated container with a cargo capacity of 7,435 lbs. The QUADCON has a structural steel welded frame; top, sides, and door panels of plywood coated with a plastic laminate; and a floor of high-density plywood covered on both sides with sheet steel. It has ISO corner fittings for lifting and restraint, and for coupling QUADCONs into arrays up to four units, and a tineway base with four-way forklift entry. A four-array of QUADCONs is nearly equivalent in volume to one 8-ft x 8-ft x 20-ft commercial container and is compatible with the 20-ft cells of a containership.

Status: A Headquarters Marine Corps contract to fabricate four pre-production prototypes was awarded on 18 Aug 83. The contract included a production option for 560 QUADCONs. Approval for service use was obtained in Jun 1984 and the production option was exercised on 21 Aug 1984. The initial production quantities will be delivered between Apr 1985 and Sep 1985.

Program Plan: The following quantities of QUADCONs are programmed for procurement in the years indicated:

<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90+</u>
700	1300	1400	1500	1830



1
**U S NAVY
 SEABEE
 EQUIPMENT
 SHELTER**

3
**SPECIFICATION MIL-S-28633A (YD)
 NSN NUMBER: 2C5410-00-004-4740
 CONTRACT DLA700-78-C-8193
 MFG BY: AMERICAN AIR FILTER CO., INC.
 DATE OF MFR: 1979**

2
**TARE WT 2,100 LBS 950 KG
 GR. WT 15,680 LBS 6,160 KG
 SINGLE
 47,040 LBS 27,480 KG
 COUPLED
 CUBE 413 CUFT 11.3 CTM
 OUTSIDE DIMS. L 8FT 2.4M
 W 6.5FT 2.0M
 H 8FT 2.4M**

Title: TRICON - Multipurpose Equipment Shelter

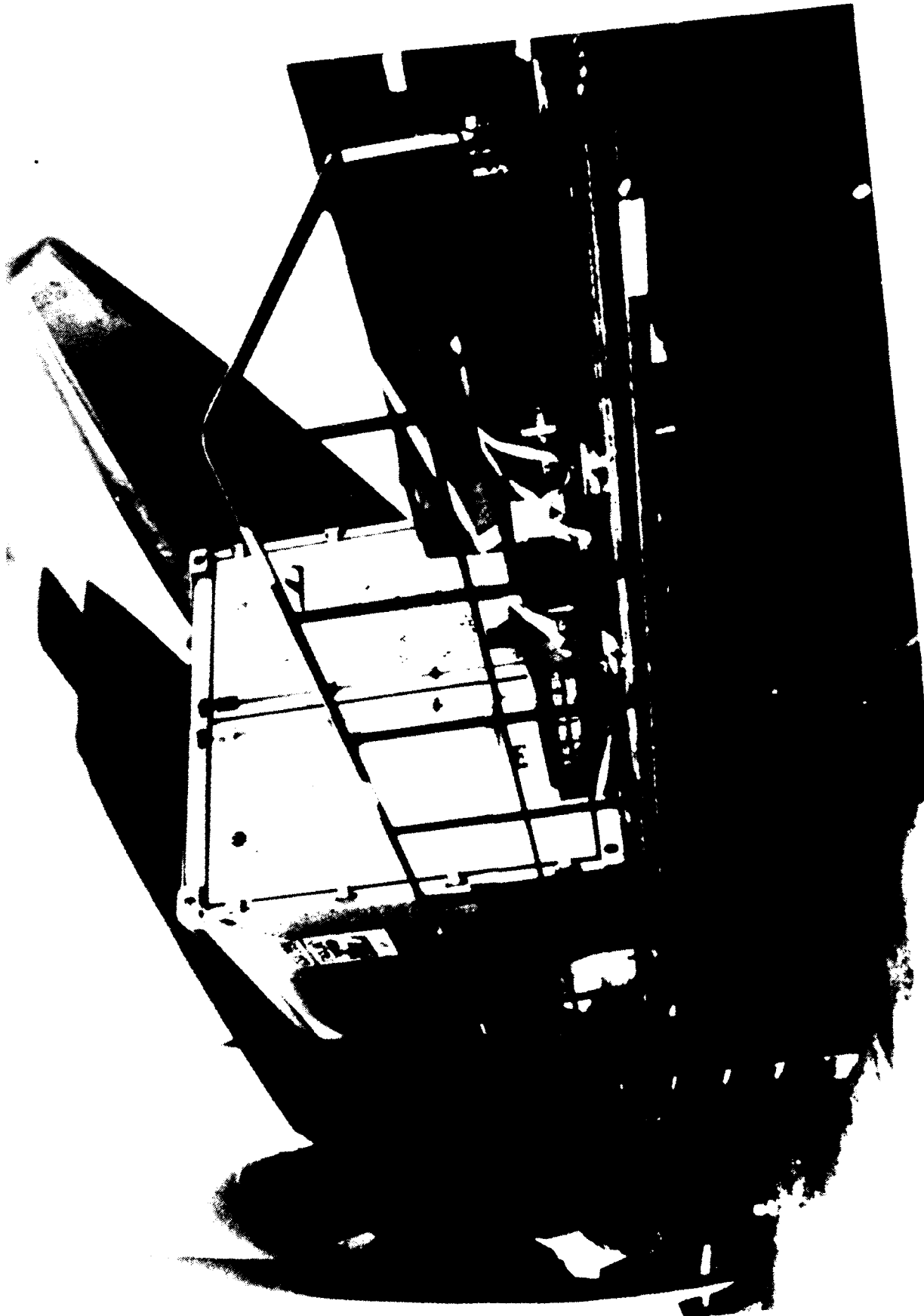
Point of Contact: Daly, P., Mr., Naval Construction Battalion Center
(CESO 1532), Port Hueneme, California 93043,
Autovon 360-3368/Commercial (805)982-3368

Item Description: The TRICON Shelter conforms to the requirements of MIL-S-28633 and is identified by the National Stock Number 2C5411-00-004-4740. It is manufactured by Americal Air Filter Co., Inc., St Louis, MO 63032 and is assigned the American Air Filter Model Number ES 200 and serial numbers ES 02101 through ES 02200, ES 03101 through ES 03180, and ES 03181 through ES 03245. The TRICON Shelter consists of a rigid steel frame covered by panels of fiberglass reinforced plastic (FRP) on plywood. Floors and exterior are green color 14064 of Fed Std 595, interior is white, color 17875 of FED STD 595. Sides, top and floor panels are affixed to the frame by means of permanent fasteners of the pin and sleeve type. On the front of the shelter are two hinged doors made of steel-clad plywood. The closed shelter is watertight. Floor level forklift pockets allow movement, placement, and storage of TRICON Shelters by use of conventional materials handling equipment. Each shelter is equipped with standard ISO corner fittings to allow lifting by overhead sling, also to permit coupling three shelters into a nominal 20-ft modular assembly. Stacking of fully-loaded shelters is limited to a height of five units.

Status: The development is complete with 128 on hand.

Program Plan: To procure TRICON shelters as follows:

<u>FY83</u>	<u>FY84</u>	<u>FY85</u>
100	954	1189



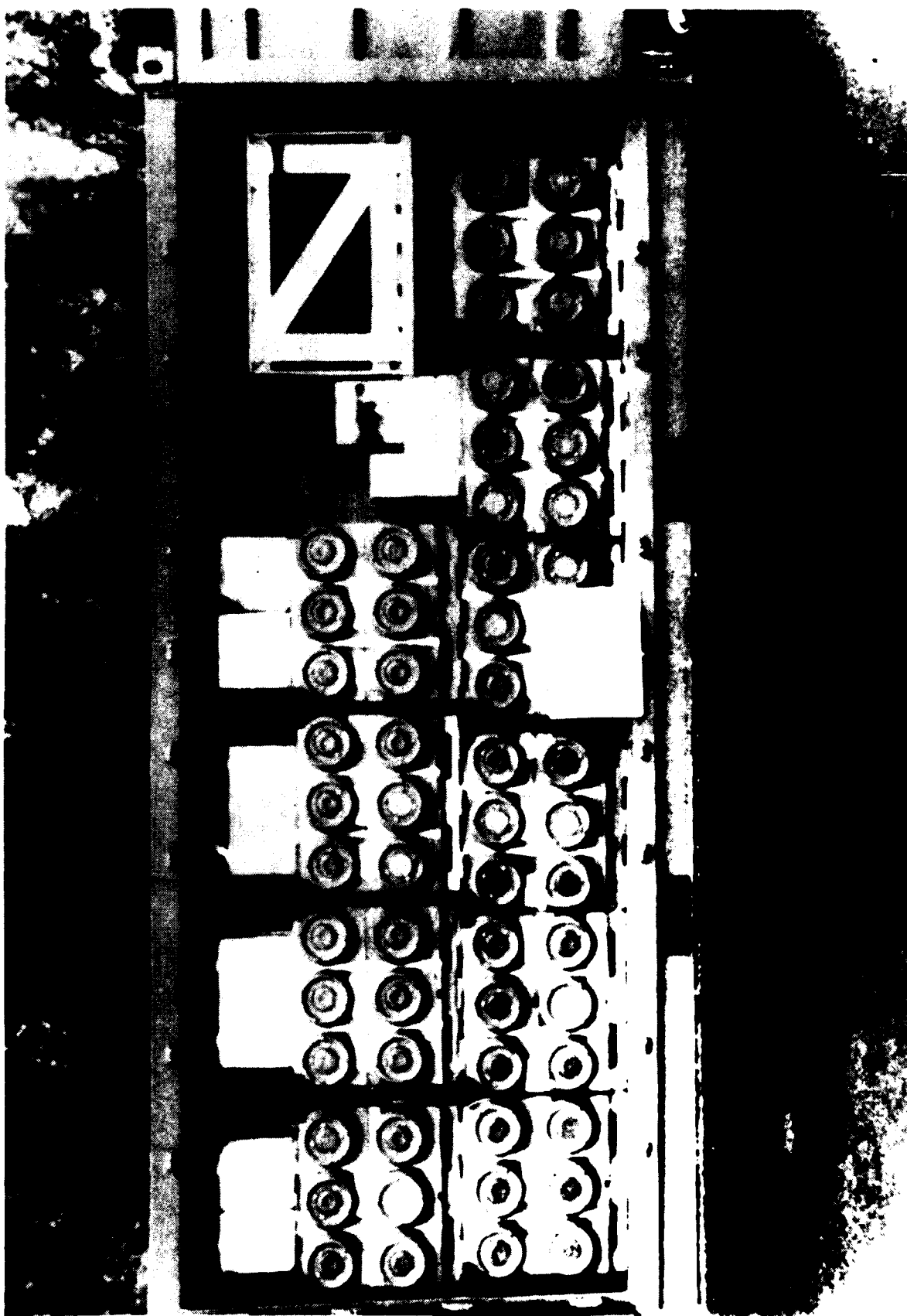
Title: Air/Surface (Intermodal) General Purpose Container

Point of Contact: Ganger, M., LTC, HQ Military Airlift Command/TRXF,
Scott AFB, IL 62225, Autovon 638-5977/Commercial
(618)256-5977

Item Description: The 8-ft x 8-ft x 20-ft air/surface container provides a capability to handle a gross weight of 25,000 lbs. It will be used to transport military general cargo from consignor to consignee via the military airlift system. The air/surface container is expected to have a tare weight which ranges from 2,116 to 2,600 lbs and an internal volume of 1,077 cubic ft. The containers are designed to ISO 8323 standards. Intermodal air cargo containers are constructed by several manufacturers using various combinations of aluminum, steel, and fiberglass. Some containers are available with forklift pockets.

Status: The requirement for intermodal air cargo containers was validated by the MAC/DARCOM ISO container test which was conducted from Dec 81 to Feb 82. OASD/(MI&L) subsequently approved the Air Force request to purchase up to 50 intermodal air cargo containers. During the procurement process, ISO discontinued the existing air/land container standard before the new air/surface standard received final approval. These actions served to delay procurement actions until late 1985 when the ISO air/surface standard is expected to be published. Currently, MAC expects to procure the containers and begin operations between CONUS and Europe by early 1986.

Program Plan: When the initial procurement is completed and routine service is underway, the Air Force will evaluate the requirements to expand the inventory of air/surface containers.



Title: 20-Ft ISO Side Opening Containers

Point of Contact: Volz, D., Mr., AD-YNP, Eglin AFB, FL, 32542-5000,
Autovon 872-3978/Commercial (904)882-3978

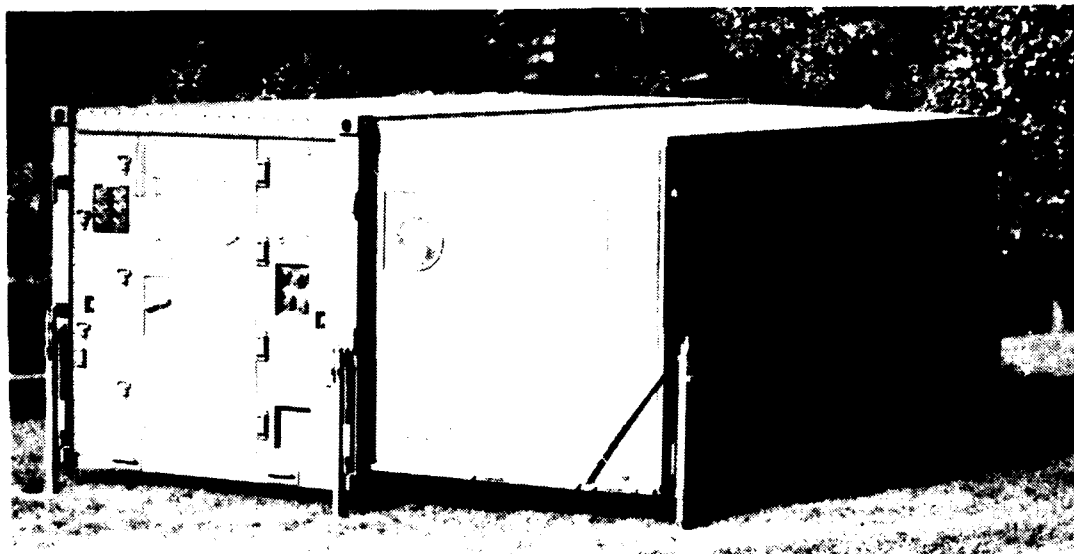
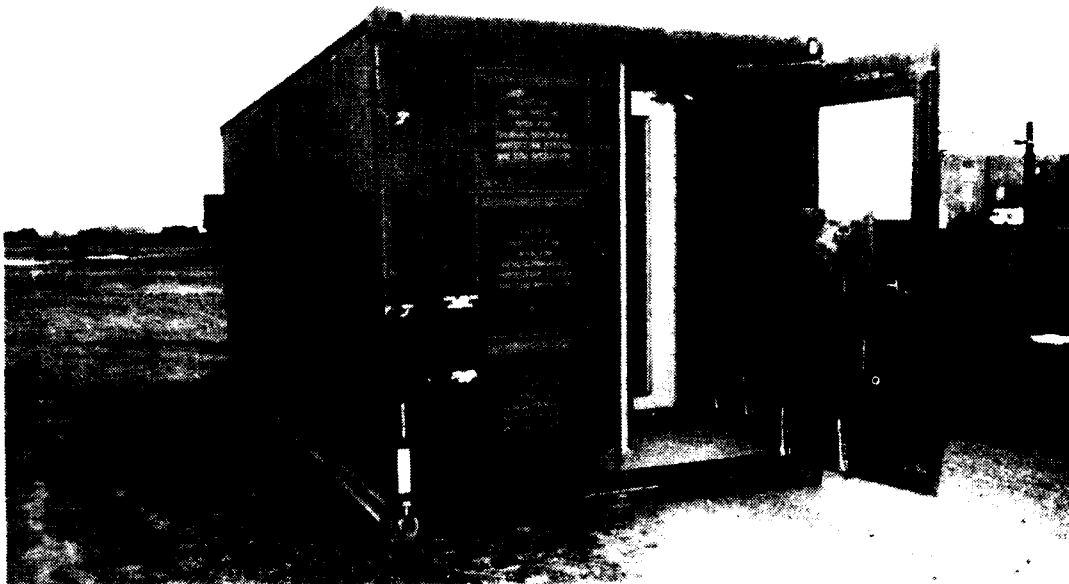
Brooks, CMSGT, HQ USAF/LEYW, Washington, DC,
Autovon 227-5097/Commercial (202)697-5097

Item Description: The Air Force is evaluating the feasibility of using side opening containers to store and ship munitions.

Status: HQ USAFE has static test loaded side opening containers with munitions. The initial test was designed to determine the storage capability of side opening containers for munitions in a complete round configuration. The test also determined the number of fighter aircraft sorties that could be supported by the munitions placed in a single 20-ft container.

The armament division has conducted a market survey of suitable designs available by lease or loan. They are also studying the lease of 3 different designs: (1) Full side opening. (2) Opposing 96" doors on opposite sides of containers. (3) Side opening with one end opening. An evaluation will be conducted in USAFE, PACAF, and AAC to determine performance specifications.

Program Plan: After performance specifications have been established the Air Force will contract for the appropriate side opening container. Funding is available for FY85.



Title: ISO Shelters

Point of Contact: Wheeler, J., Mr., US Army Natick Research and Development Center, Natick, MA 01760-5017, Autovon 256-5246/Commercial (617)651-5246

Harris, F., Capt, Electronic Systems Division/OCMS, Hanscom AFB, MA 01731, Autovon 478-4106/Commercial (617)861-4106

Item Description: A shelter is a presized, transportable structure designed for a functional requirement and which provides a live-in or work-in capability. This structure can be either rigid or expandable. Insofar as practical, the shelter will conform to applicable ANSI/ISO container standards. All services are increasing their utilization of the shelter concept and the impact of shelters on the transportation and materiel handling system will become more and more significant in coming years. A standard family of 20-ft rigid wall ISO shelters has been developed by the US Army Natick Research and Development Center for DOD use. The shelter family includes three types:

- a. Non-Expandable (1:1) Rigid Wall ISO Shelter.
- b. One-Side Expandable (2:1) Rigid Wall ISO Shelter.
- c. Two-Side Expandable (3:1) Rigid Wall ISO Shelter.

Status:

a. 1:1, 2:1, and 3:1 ISO shelters have completed development and a Technical Data Package has been prepared. The First Production contract was awarded on 27 Apr 84 for 762 shelters with an FY85 option for 200% more.

b. The following quantities represent standard ISO shelters procured since 1978 for both the Army Formal Shelter Development Program and for Specific new Navy, Air Force and Army ISO sheltered systems.

Approximate Quantity

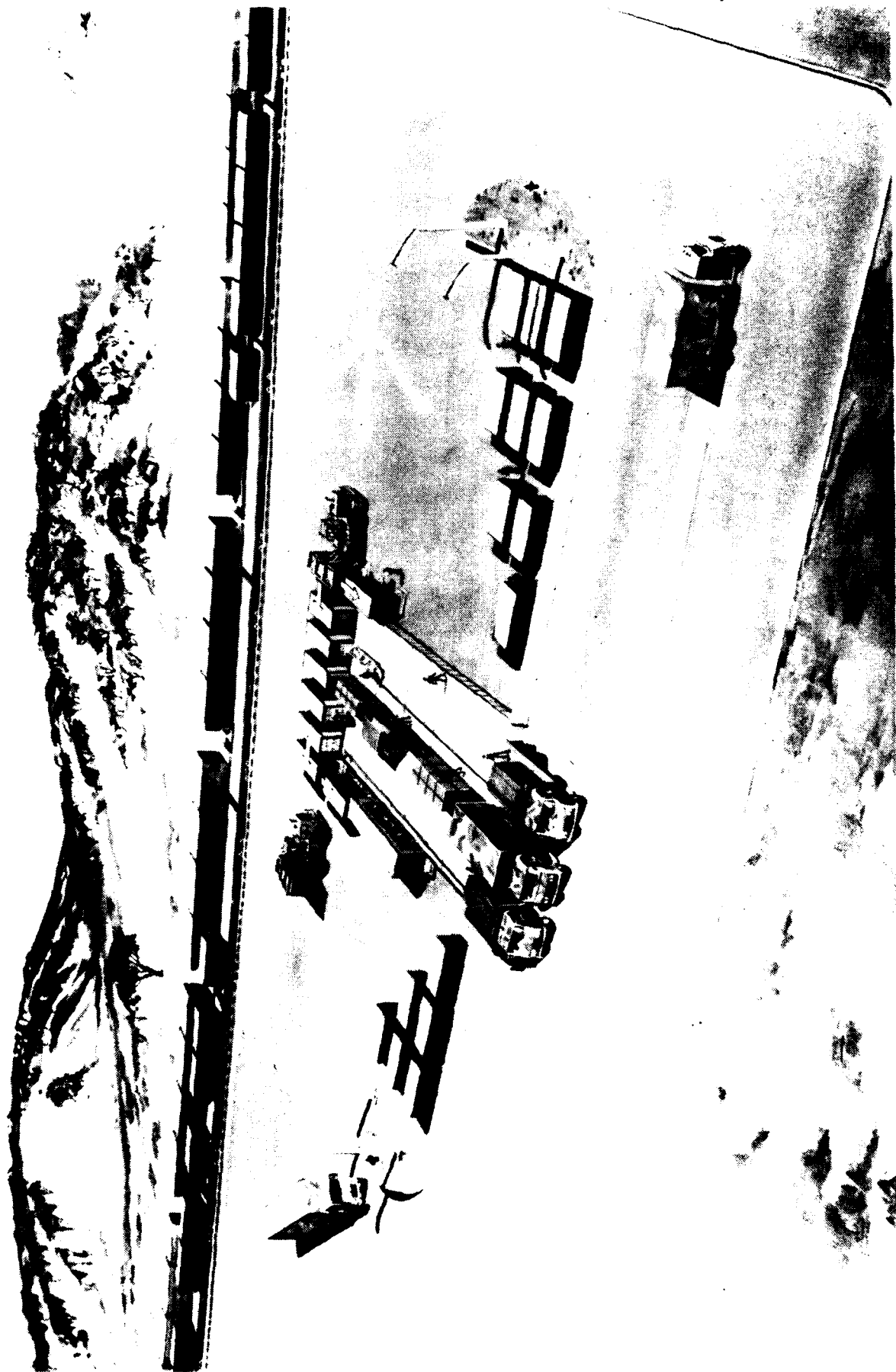
1:1 ISO Shelter	9
2:1 ISO Shelter	67
3:1 ISO Shelter	29

Program Plan: The Army is currently preparing for First Article Testing of shelters being delivered under the First Production Contract. An option will be awarded in May 85 under this contract to cover DOD FY85 requirements. It is estimated at this time that 911 units will be procured in FY85, 447 in FY86, and 618 in FY87. USAF also has requirements for 984 additional Navy design ISO shelters through FY90.



HANDLING EQUIPMENT

PALS CONTAINER OUTLOADING FACILITY - SVADA



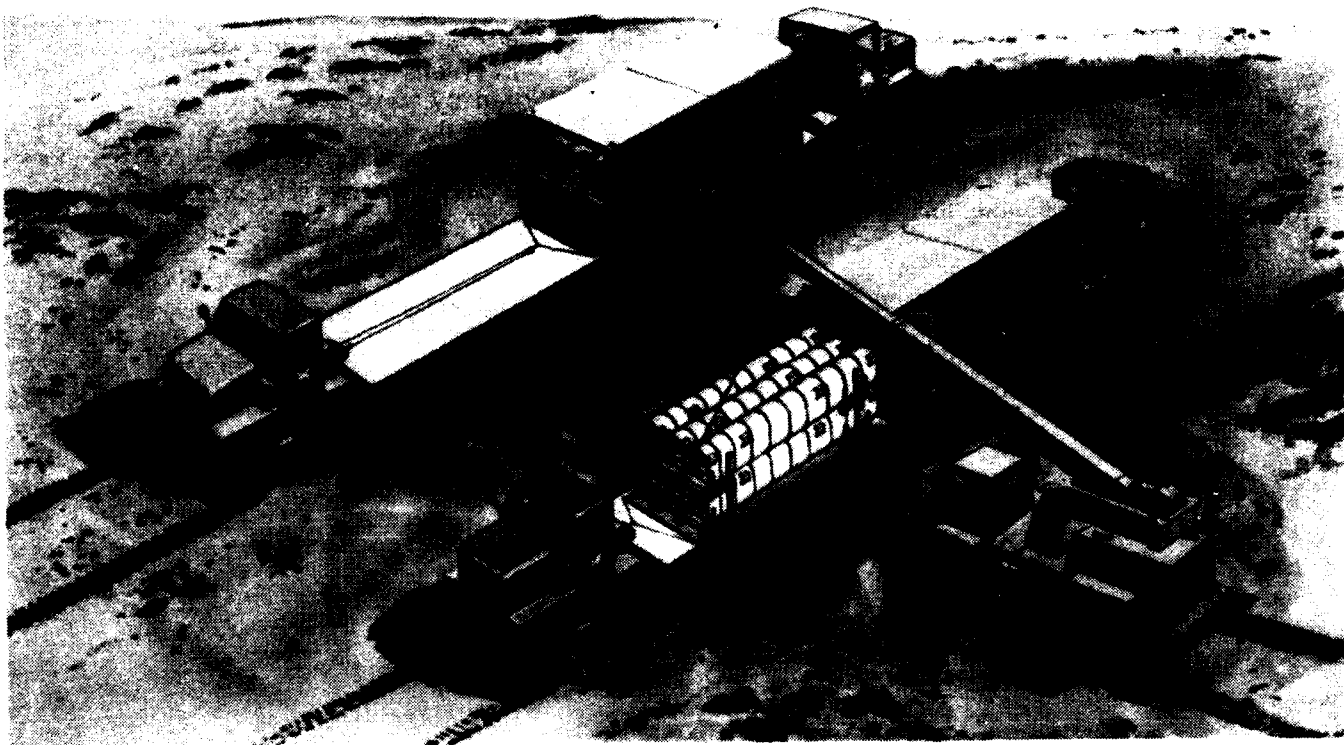
Title: Prestaged Ammunition Loading System (PALS)

Point of Contact: Rodrick, E., Mr., US Army Belvoir R&D Center,
STRBE-GMR, Fort Belvoir, VA 22060-5606, Autovon
354-1143/Commercial (703)664-1143

Item Description: The Prestaged Ammunition Loading System will give CONUS ammunition depots, plants, and ocean terminals the capability to meet a mobilization goal of outloading 1,000 commercial containers per day with reduced manpower and material when compared to existing outloading methodologies. PALS consists of six major subsystems: transfer vehicle; container loader; container indexing; container dunnage; materials handling; and inspection and documentation.

Status: A study, including a cost effectiveness analysis, was conducted and the automatic dockmounted loader system was found to be the most effective approach. A PALS compatible dunnage subsystem was developed by the Defense Ammunition Center to interface with the dockmounted loader methodology. This subsystem was successfully subjected to regulatory testing during Nov 81. A device to automatically install the dunnage into the container has been designed. Design of PALS has been finalized and hardware interface drawings prepared to allow concurrent development of PALS dockmounted hardware drawings are being prepared to allow initiation of hardware fabrication in FY84. Drawing package to allow hardware fabrication was completed in FY84. In February 84, the program was terminated when the requirement was withdrawn by the user.

Program Plan: Program terminated.



**GIANT SLIP SHEET AMMUNITION HANDLING SYSTEM
(CONTAINER TO SEMI-TRAILER UNLOADING)**

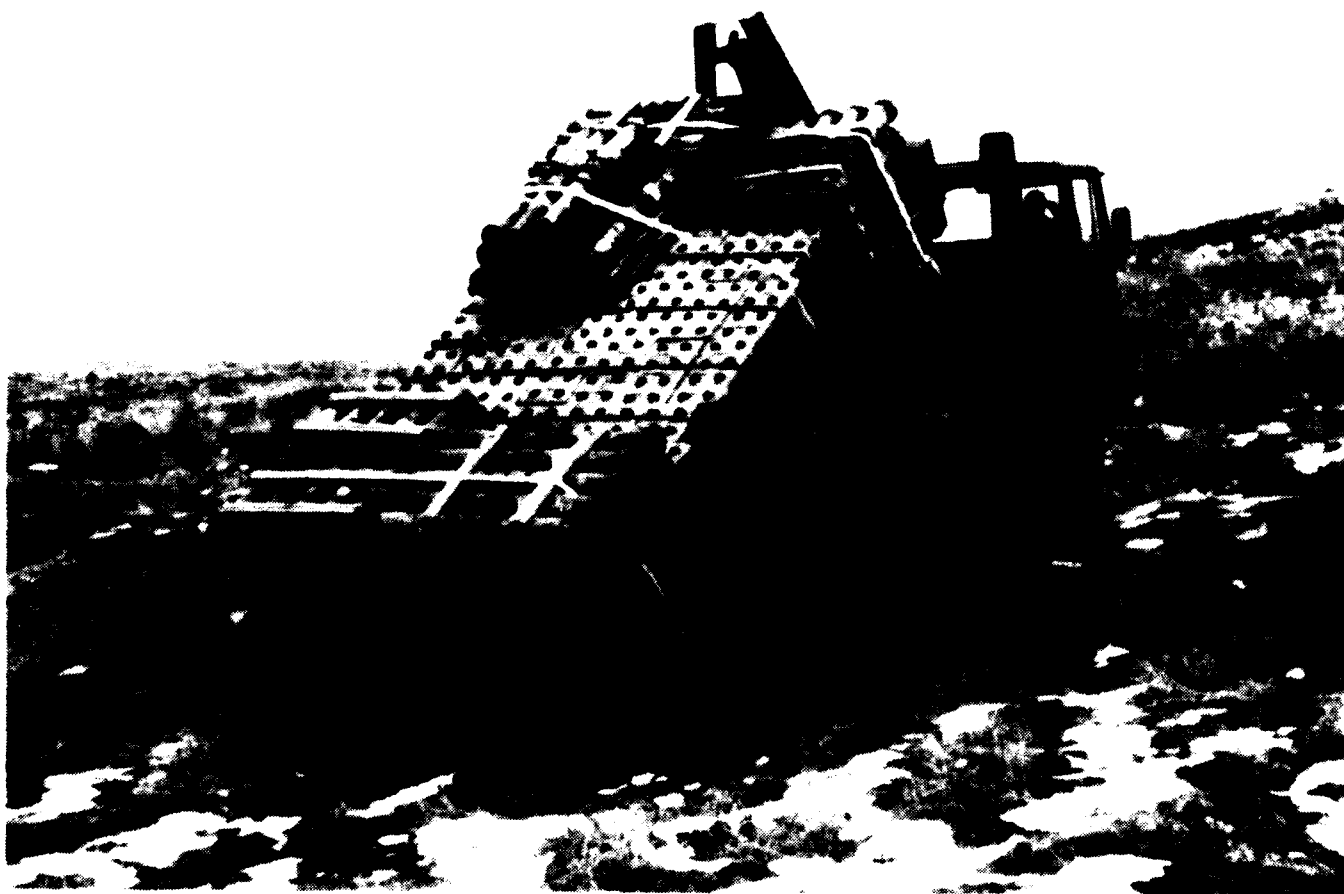
Title: Slip Sheets for Unstuffing Containerized Ammunition in the Field

Point of Contact: Rodrick, E., Mr., US Army Belvoir R&D Center,
STRBE-GMR, Fort Belvoir, VA 22060-5606, Autovon 354-1143/
Commercial (703)664-1143

Item Description: The Slip Sheet is used to extract an entire load of ammunition, weighing up to 20 tons, from cargo containers as a unit load, thereby, allowing easy access to the palletized load by materials handling equipment. The Slip Sheet System consists of a polyethylene sheet, which is placed on the floor of the cargo container prior to ammunition being stuffed, and a clamping device which is used to extract the sheet from the container. Various methods can be utilized to provide extract force, e.g., winch, tow bar, etc.

Status: Slip Sheets are currently undergoing engineering tests at Belvoir R&D Center and the Defense Ammunition Center.

Program Plan: Conduct military potential tests in CONUS and OCONUS.



II-3

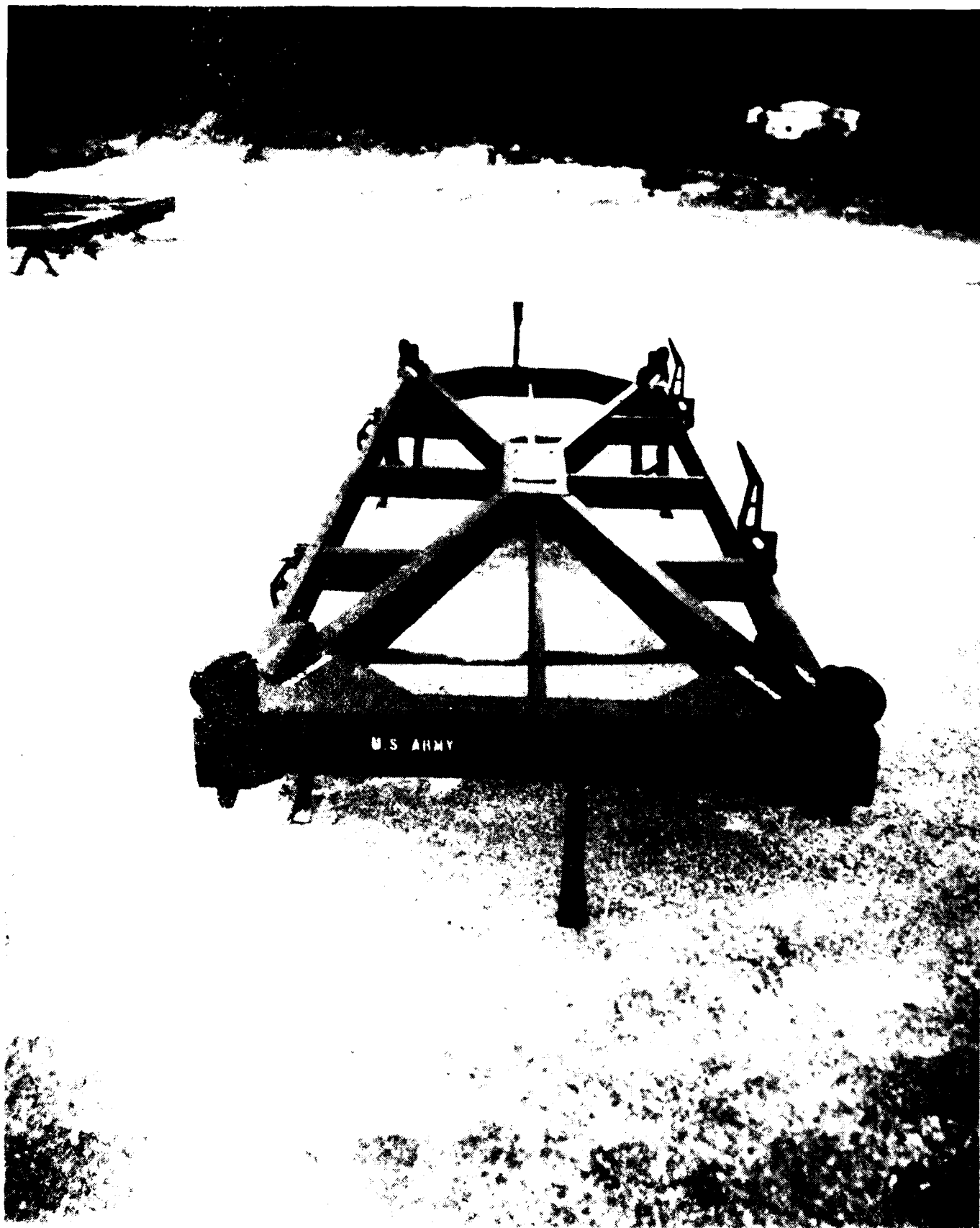
Title: Palletized Loading System (PLS)

Point of Contact: Rodrick, E., Mr., US Army Belvoir R&D Center,
STRBE-GMR, Fort Belvoir, VA 22060-5606,
Autovon 354-1143/Commercial (703)664-1143

Item Description: The Palletized Loading System (PLS) consists of a medium mobility truck chassis; an integral hydraulic load handling mechanism; a compatible trailer and a number of flatracks. The system is capable of self-loading and unloading the flatracks from the ground onto the truck chassis using the integral load handling system. The vehicle mounted load handling system also has the capability to load and unload flatracks onto the companion trailer. The system is being evaluated in two sizes, a heavy PLS with 15 ton payload and a medium PLS with 7-1/2 ton payload.

Status: Three (3) heavy PLS have been undergoing O&O evaluations for a year with ADEA and the 9th ID at Ft Lewis, WA. Three additional heavys and 15 medium PLS will be delivered during 2Q85 for continued evaluation.

Program Plan: Continue O&O evaluation at Ft Lewis, WA.



Title: Spreader Bars, Intermodal Container Handling

Point of Contact: Shively, P., Mr., US Army Belvoir R&D Center,
STRBE-GMW, Fort Belvoir, VA 22060-5606, Autovon 354-4490/
Commercial (703)664-4490

Item Description: A manually operated locking frame, conforming to
MIL-S-52713A(ME), used for the lifting and handling of International Standards
Organization (ISO) and intermodal containers.

Status: A contract was awarded in FY81 to Line Fast Corporation for 102
spreaders. The option for an additional 100 spreader units (20-ft, 35-ft, and
40-ft) was exercised in FY82 to bring the total to 202 spreaders. Delivery of
these units has been completed. An investigation, test, and evaluation into
alternate methods of aligning spreader bars to containers was conducted during
FY83.

Program Plan: No actions are planned in FY85.



11-5

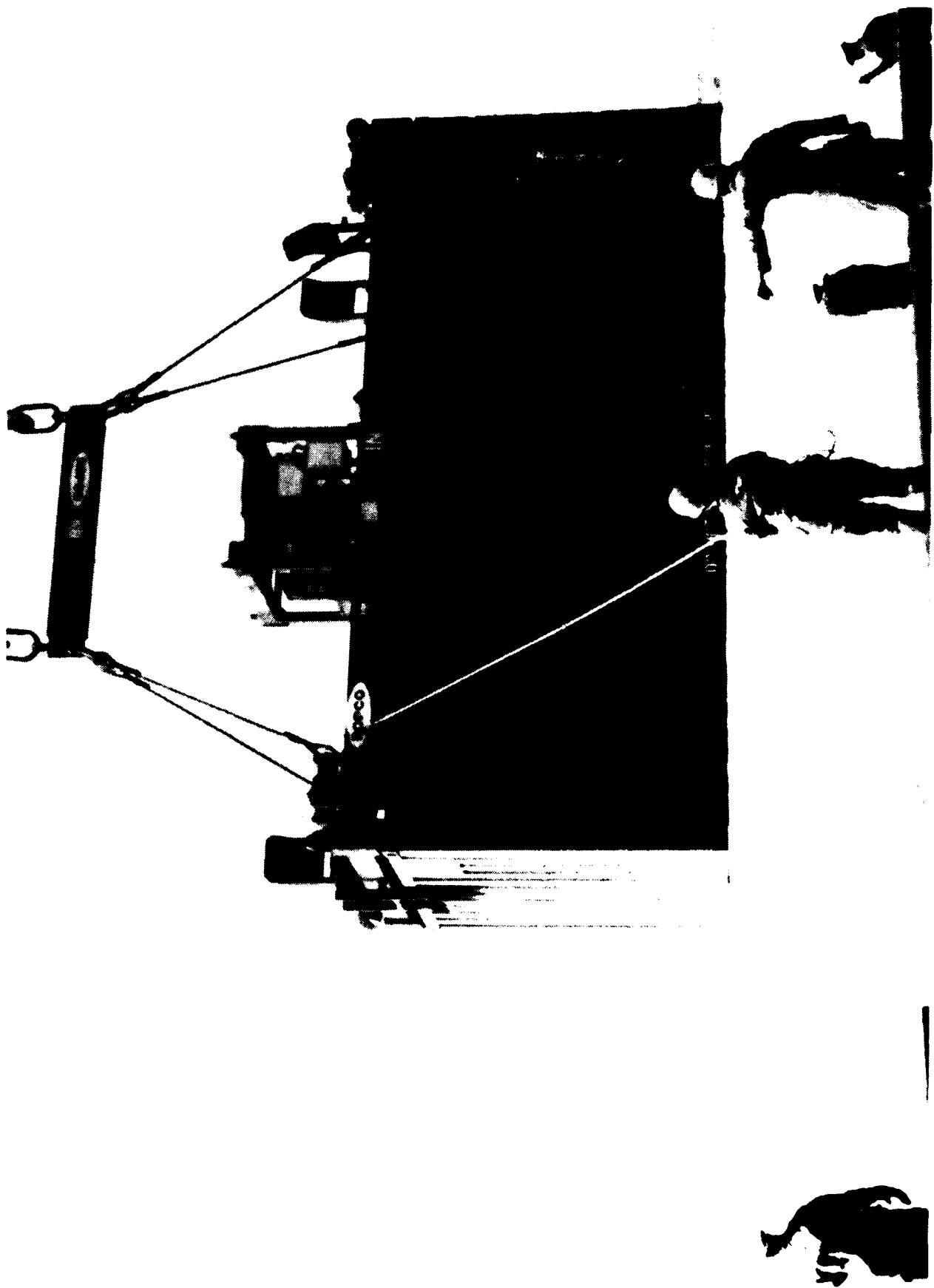
Title: Spreader Bars, Intermodal Container Handling, Lightweight Expandable

Point of Contact: Chapman, K., Ms., US Army Belvoir R&D Center, STRBE-GMW,
Fort Belvoir, VA 22060-5606, Autovon 354-4490/
Commercial (703)664-4490

Item Description: An electro/hydraulically activated expandable spreader bar is used for the lifting and handling of International Standards Organization (ISO) and intermodal containers. The spreader bar is capable of expanding longitudinally to match the size of the mating container, i.e. 20-ft, 35-ft, or 40-ft. The expandable spreader bar is designed for use with the 50,000 lb capacity Rough Terrain Container Handler.

Status: The design and fabrication of a lightweight expandable spreader bar by Mobility Systems and Equipment has been completed. This conceptual design was evaluated at Belvoir R&D Center in FY84. Three lightweight expandable spreader bars have been on loan from various commercial manufacturers for test and evaluation. These spreader bars were evaluated during FY84 Joint Logistics-Over-the-Shore (J-LOTS) operations.

Program Plan: Continue test and evaluation of lightweight expandable spreader bars. Investigate the potential for using a lightweight expandable spreader in conjunction with Army cranes during container handling operations in FY85.



Title: Spreader Bars, Intermodal Container Handling, Remote Control

Point of Contact: Shively, P., Mr., US Army Belvoir R&D Center, STRBE-GMW,
Fort Belvoir, VA 22060-5606, Autovon 354-4490/Commercial
(703)664-4490

Item Description: A diesel engine driven, hydraulically operated, remotely actuated locking frame used for the lifting and handling of International Standard Organization (ISO) and intermodal containers.

Status: A contract was awarded in FY82 to RPC Corporation for one 20-ft and one 40-ft radio-controlled spreader bar. These units were evaluated during Lifeline 83. Initial findings of this evaluation indicate that equipment of this type is beneficial to the Army's Logistics-Over-The-Shore (LOTS) operations.

Program Plan: Additional evaluation of the radio-controlled spreader bar in conjunction with a load rotator will be conducted during FY85.



CAPACITY: 16,000 LBS.

LENGTH: 36 FT. INCL. 6 FT. LEVEL-OFF SEC

HEIGHT: ADJUSTABLE FROM 46 IN. TO 65 IN.

WIDTH: 8 FT. APPROX.

WEIGHT: 6,000 LBS. APPROX.

Title: Ramp, Loading, Mobile

Point of Contact: McGeorge, W., Mr., US Army Belvoir R&D Center,
STRBE-GMW, Fort Belvoir, VA 22060-5606, Autovon 354-4490/
Commercial (703)664-4490

Item Description: This item is used in conjunction with the 4,000 lb Rough Terrain Forklift Truck for stuffing and stripping the 8-ft wide family of containers when the container is on a semitrailer/chassis. The ramp is 96-in wide, 36-ft long, including a 6-ft level-off section, weighs approximately 6,000 lbs and costs approximately \$6,500. The bed height is adjustable from 45-in to 65-in.

Status: A firm fixed price contract was awarded to Magline, Inc. for 83 commercial units. The preproduction testing was completed in Mar 76. Final production delivery took place as scheduled for Jun 76 through Apr 77. A contract was negotiated with Magline, Inc. to increase the curb height to 12-in on the 83 fielded ramps to overcome safety deficiencies. Delivery of the Magline ramps has been completed. A second multi-year contract was awarded on 11 Nov 77 to Brooks and Perkins, Inc. to provide an additional quantity of 346 ramps. Under the option in the Brooks & Perkins contract, additional quantities of 346 units were procured. All deliveries have been completed. A two-step multi-year procurement contract was awarded to Magline, Inc. in 4QFY81 for additional ramps. A total of 828 ramps were delivered.

Program Plan: Next procurement is planned for FY89 and FY90.



CAP.: 4,000 LBS. @ 24 IN. LC
WIDTH: 79 IN.
WEIGHT: 10,000 LBS.

LENGTH W/FORKS: 215 IN.
HEIGHT W/ROPS: 80 IN.

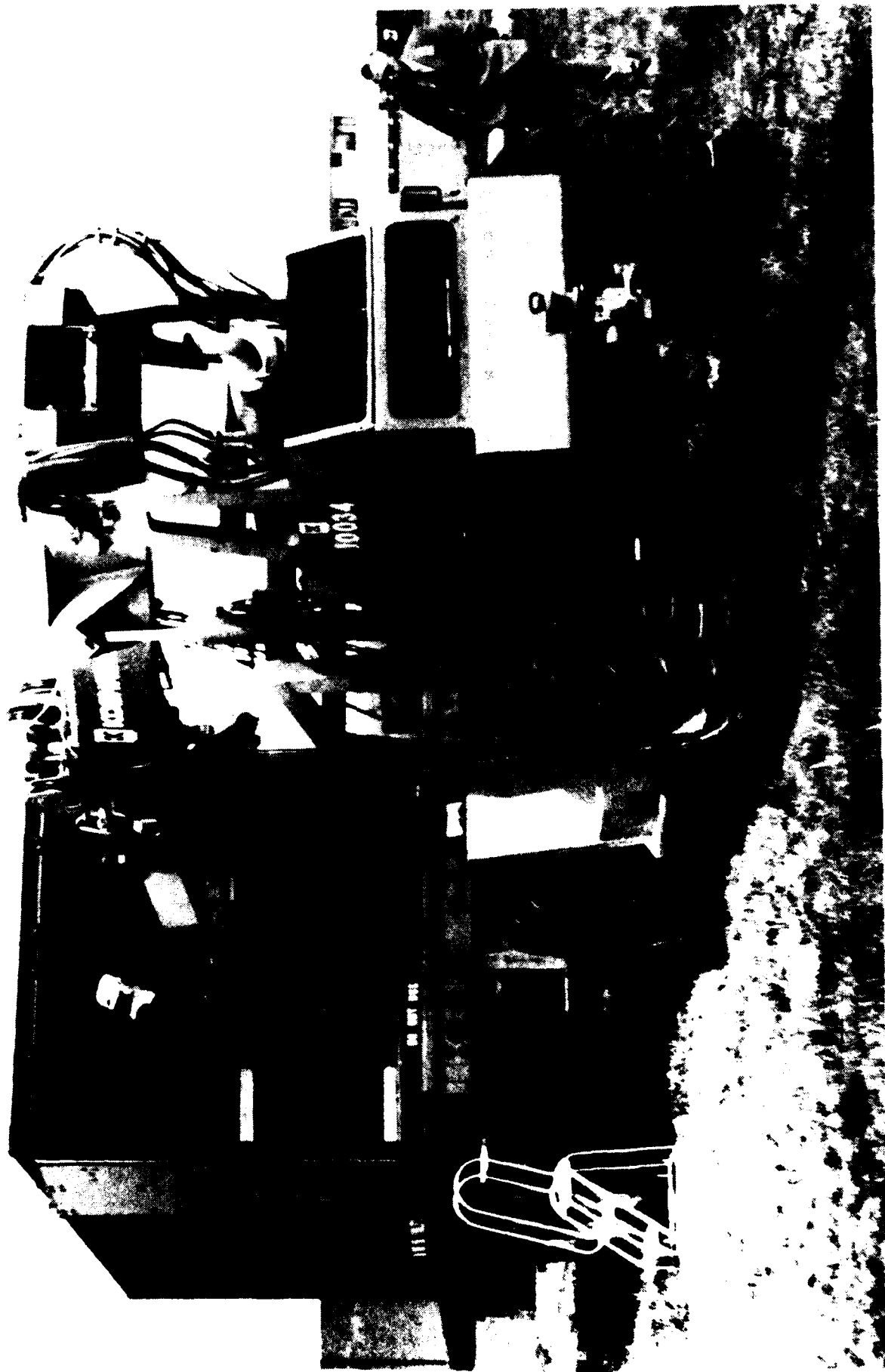
Title: 4,000 lb Capacity Forklift Truck, Rough Terrain (RTFLT)

Point of Contact: McLean, J., Mr., US Army Belvoir R&D Center, STRBE-GMR,
Fort Belvoir, VA 22060-5606, Autovon 354-1143/Commercial
(703)664-1143

Item Description: This item provides a capability of stuffing and stripping the 8-ft wide family of containers under field conditions. The vehicle is sized to effectively operate within the container including placing two pallet loads side by side within the container. The vehicle weighs approximately 10,000 lbs, is 79-in wide, 80-in high, and 165-in long.

Status: A multi-year contract was awarded to J.I. Case Co. to provide a quantity of 1,910 forklifts to be delivered from Aug 80 through Jul 84. Initial fielding of 209 units was made to Korea and USAREUR. Additional fielding was made on call-up. As of 31 Dec 84 the contractor had produced 1,914 vehicles at a scheduled rate of approximately 66 vehicles per month. Production of vehicles under contract is complete and all trucks delivered.

Program Plan: Perform necessary actions as required to assure adequate operation in the field.



Title: 6,000 lb Capacity Variable Reach Forklift Truck, Rough Terrain
(6K VRRTFLT)

Point of Contact: Hurley, J., Ms., US Army Belvoir R&D Center,
STRBE-GMR, Fort Belvoir, VA 22060-5606,
Autovon 354-1143/Commercial (703)664-1143

Item Description: This item will provide capability of stuffing and stripping of the 8-ft x 8-ft x 20-ft MILVAN and ISO containers on the ground or mounted on the M871 Trailer under field conditions. The vehicle is sized to handle the Multiple Launch Rocket System (MLRS) pods loaded four to a container requiring a 6,000 lb capacity at a reach of 15-ft and also handle 4,000 lb Ammunition Pallets in containers requiring a reach of 23.5-ft. The vehicle is expected to weigh approximately 30,000 lbs, have a width of 96-in, maximum height of 102-in, a wheel base not less than 96-in and a length, including forks, of 242-in.

Status: The 6K VRRTFLT was Type Classified in November 1984.

Program Plan: Upon DA approval of the Acquisition Plan, the program will proceed to contract award (currently scheduled for 3QFY85) for initial deliveries to be made during 2QFY86 and Initial Operational Capability of 4QFY87.



II-10

Title: 4,000 lb Capacity Forklift Truck

Point of Contact: Lee, T., Mr., US Army Belvoir R&D Center, STRBE-GMW,
Fort Belvoir, VA 22060-5606, Autovon 354-4490/Commercial
(703)664-4490

Lewis, R., LTC, or McAllister, J., Mr., HQ USAF/LETN,
Washington, DC 20330, Autovon 227-3371/Commercial
(202)697-3371.

Item Description: This unit provides Air Force bases and the Army the capability to load and unload ISO containers. It is a commercial type forklift with a lift height of at least 144-in. The Air Force is purchasing diesel powered versions of this forklift in lieu of gasoline powered forklift.

Status: The Army has an inventory of approximately 1,700 units.

Program Plan: The Army's plan is to purchase forklifts from the FY84-87 plan with diesel engines in lieu of gasoline engines. The Army FY84-87 Procurement Plan is for 649 units.



CAP.: 50,000 LBS. @ 48 IN. LC

WIDTH: 138 IN.

WEIGHT: 103,000 LBS. (W/O SPREADER)

LENGTH: 420 IN.

HEIGHT: 167 IN.

SPREADER BARS WEIGHTS

20 FT. — 3,800 LBS.

40 FT. — 9,927 LBS.

35 FT. — 9,120 LBS.

Title: 50,000 lb Capacity Container Handler, Rough Terrain (RTCH)

Point of Contact: McLean, J., Mr., US Army Belvoir R&D Center, STRBE-GMR,
Fort Belvoir, VA 22060-5606, Autovon 354-1143/Commercial
(703)664-1143

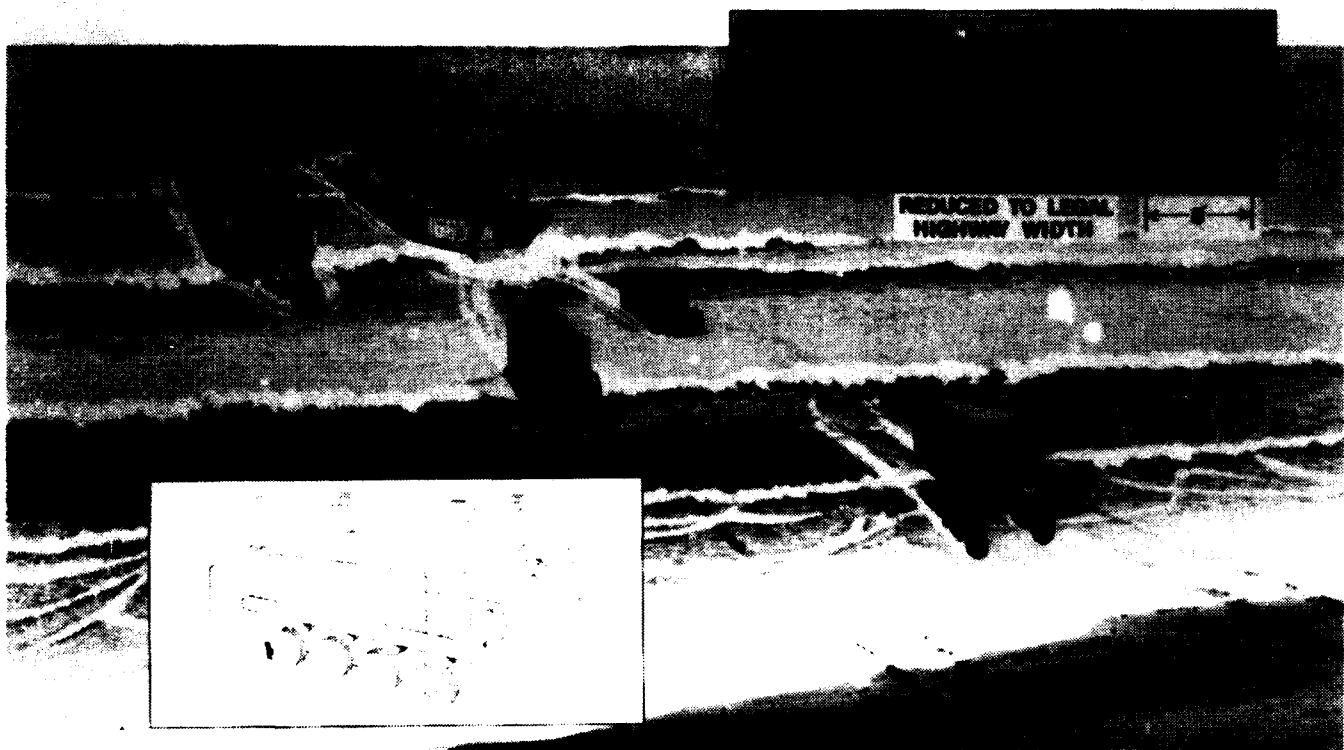
Lewis, R., LTC, or McAllister, J., Mr., HQ USAF/LETN,
Washington, DC 20330, Autovon 207-3371/Commercial
(202)697-3371

Item Description: This item provides a capability of handling the 8-ft wide family of containers weighing up to 50,000 lbs and 20, 35, and 40-ft in length. It is capable of operating as a rough terrain truck primarily in supply holding storage and marshalling areas by selected supply, ammunition and transportation units. The RTCH is a modified commercial design and procured to a military specification. The vehicle weighs approximately 103,000 lbs, is 138-in wide, 167-in high and 35-ft long.

Status: A multi-year production contract was awarded to Caterpillar Tractor Co. in Sep 78 for 177 vehicles including two pre-production test vehicles and an option for an additional 175 vehicles. The initial fielding began with 20 vehicles being delivered to FORSCOM in FY81 for LIFE LINE II EXERCISE; delivery is to continue to gaining commands upon request. As of 31 Dec 83, Belvoir R&D Center has modified the contract for a total production of 344 trucks. The Air Force is procuring three of these trucks to handle Air Force CADS Shipments to Andersen AFB, Guam. Sandy soil conditions at the ammunition storage location dictate the need for a rough terrain handling capability. Under this contract, the Marine Corps has procured six trucks and is procuring 15 more to be delivered. Production of trucks under contract is complete.

Program Plan: Procurement and production of trucks under contract are completed and action is being taken to deliver the trucks to the field and complete overall contract in 2QFY85.

ROUGH TERRAIN CONTAINER STRADDLE TRUCK (RTCST)



Title: Rough Terrain Container Straddle Truck (RTCST)

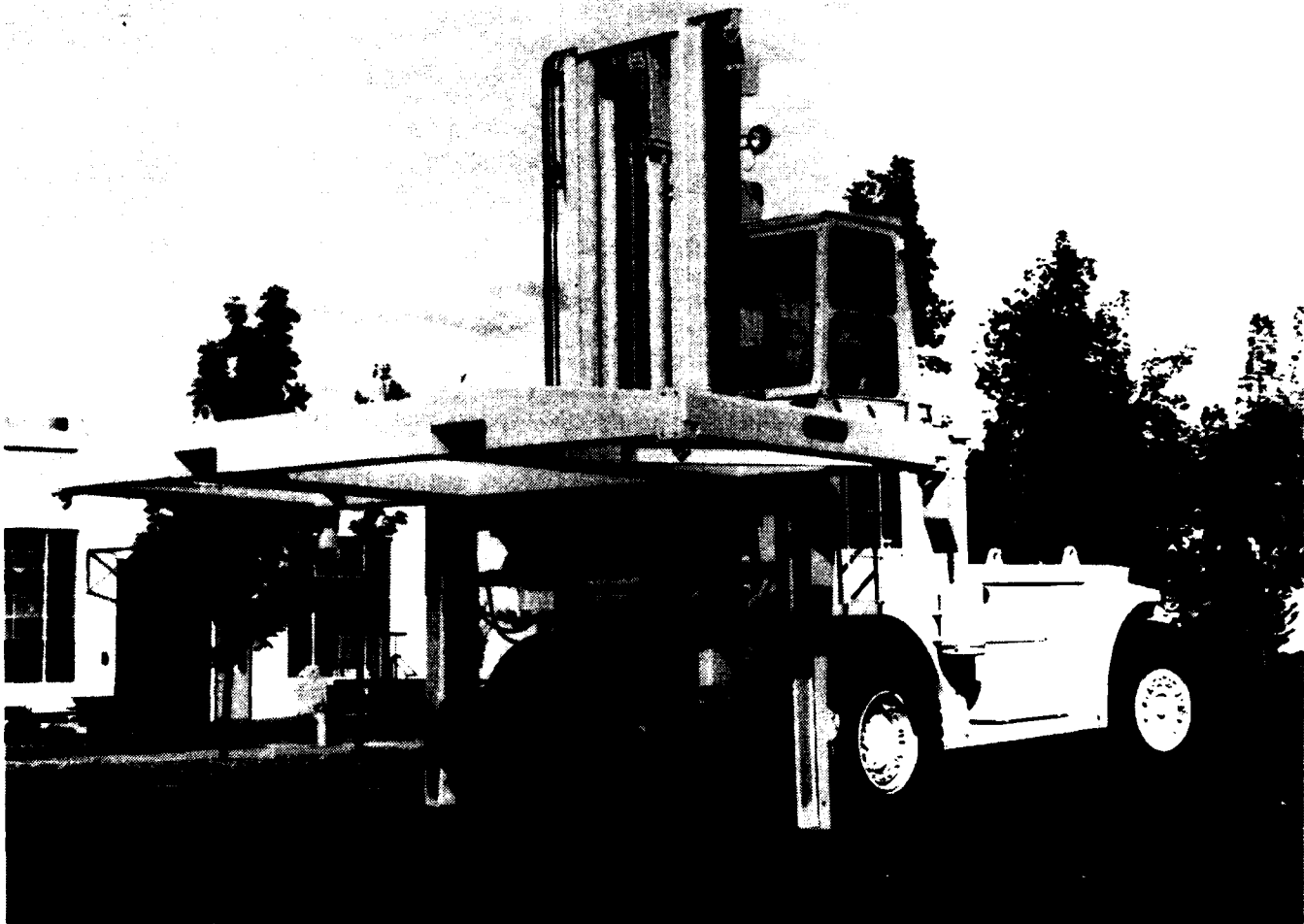
Point of Contact: Pollock, D., Mr., US Army Belvoir R&D Center,
STRBE-GMR, Fort Belvoir, VA 22060-5606,
Autovon 354-1143/Commercial (703)664-1143

Lundy, C., MAJ, Marine Corps Development and Education
Command, ATTN: M&L Division (D075), Quantico, VA 22134
Autovon 278-2021/Commercial (703) 640-2021

Item Description: The RTCST will be capable of self-loading, transporting, and grounding 20-ft long ISO shelters and shipping containers weighing up to 50,000 lbs. It will be used by medical units for deploying field hospitals and shelters in forward battle areas. It will also be used by transportation units to off-load ISO containers from beached landing craft and transport them through the surf and over land to marshalling areas. An eight-wheel, hydrostatic drive undercarriage will provide superb rough terrain mobility when transporting fully loaded shelters and containers at speeds up to 25 mph. A highway speed of 45 mph will also be attainable for self-deployment in the unloaded configuration. The RTCST will weigh approximately 45,000 lbs and will have a variable width ranging from 96-in to 156-in. It will be approximately 33-ft long, have a 36-ft diameter turning circle, and be drive-on/drive-off air transportable on a C-130 aircraft.

Status: The RTCST is currently entering the concept exploration phase of the research and development process. An Operational and Organizational (O&O) Plan is being circulated within the TRADOC community for final approval.

Program Plan: A contract award for two prototype RTCST's is anticipated in FY85. Delivery of the prototypes and initiation of DT/OT I is planned during FY86.



CAP.: 50,000 LBS. @ 48 IN. LC
WIDTH: 132 IN.
WEIGHT: 80,000 LBS. APPROX.

LENGTH: 268 IN. INCL. LIFT ATT.
HEIGHT: 230 IN.

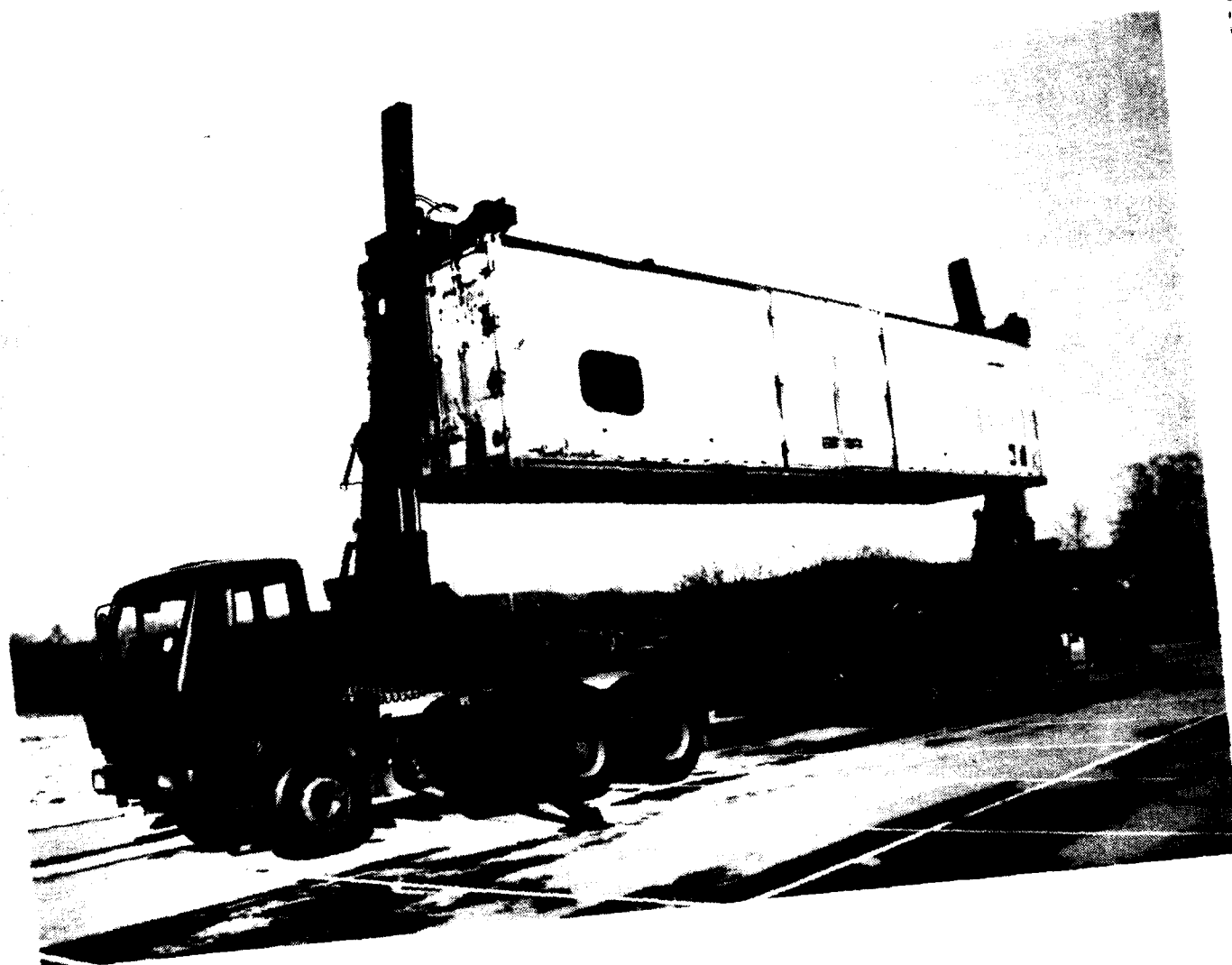
Title: 50,000 lb Capacity Depot & Terminal Container Handler, Front Loader

Point of Contact: Cunniffe, W., Mr., US Army Belvoir R&D Center,
STRBE-GMW, Fort Belvoir, VA 22060-5606, Autovon 354-4490/
Commercial (703)664-4490

Item Description: This item has a capability to handle breakbulk and the family of 8-ft wide containers weighing up to 50,000 lbs and up to 40-ft in length in CONUS and OCONUS terminals and depots. The vehicle is capable of stacking containers three high. The truck is approximately 132-in wide, 268-in long (including forklift attachment), 230-in high with mast in lowest position, weighs approximately 80,000 lbs and originally cost approximately \$90,000.

Status: A contract was awarded in Apr 73 to the Hyster Company for 15 units to meet CONUS depots' requirements. Hyster model 620 was procured with high mounted cab.

Program Plan: Procurement of additional quantities of this item is not planned. It was determined that the Rough Terrain Container Handler could also perform the CONUS/OCONUS terminal and depot mission.



II-14

Title: 20/40-Ft Container Sideloader

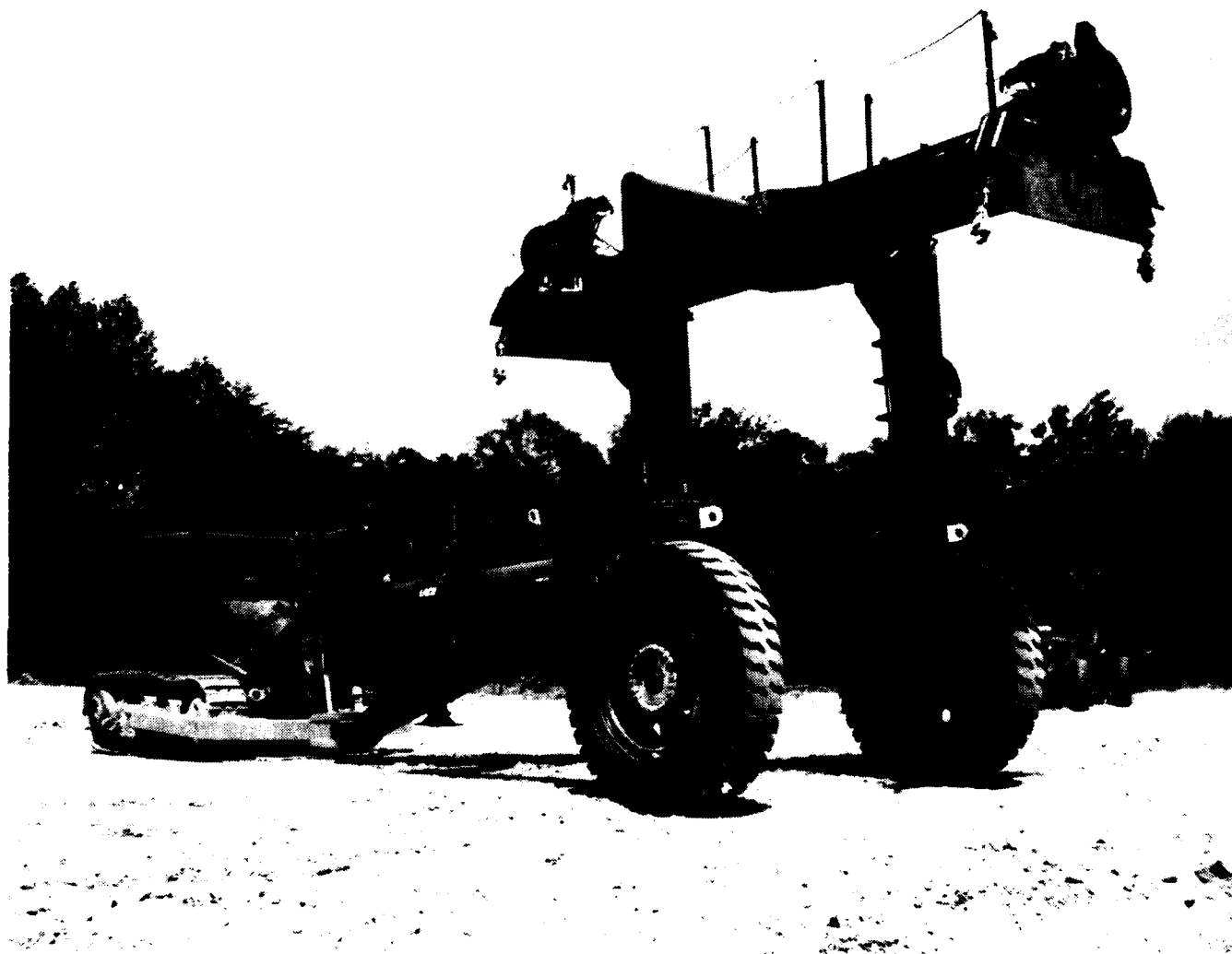
Point of Contact: Allenbacher, W., Mr, US Air Forces Europe,
Ramstein AB, GE, APO 09012 New York, New York,
Autovon 480-6321 or 7468/Commercial
06371-47-6321/7468.

Fertman, N., Mr., US Army Belvoir R&D Center,
STRBE-GMR, Fort Belvoir, VA 22060-5606, Autovon 354-1143/
Commercial (703)664-1143

Item Description: This diesel powered container sideloader is capable of transferring, or self-loading and transporting 20 through 40-ft ISO containers or tactical shelters. Maximum lifting capability is 66,150 lbs, with an additional 10 percent safety weight factor built-in. The unit has a telescopic spreader bar for 20, 35, and 40-ft containers, and will also operate/lift containers with slings. The sideloaders can transport containers within maximum road height limitations. It also has an air ride suspension making it viable to transport ISO containers carrying delicate equipment. The unit is self-deployable by road and possibly by C-5 military airlift. Estimated unit cost, with 26-ton tractor, is approximately \$200,000. The tractor is optional.

Status: A quantity of four Klaus handlers was procured for Miesau Army Ammo Depot in 1972 to meet an urgent requirement for container handling. A BeSima/Marmon handler and a Steadman handler were procured and evaluated by Belvoir R&D Center in 1975-76. The Steadman handler was subsequently provided to ASP-1 Vilseck, Germany. In Aug 78, four additional Klaus handlers with tractors were procured for Army use at ASP-1. In 1982, the Air Force successfully tested the use of a sideloader (on loan from the Army) during an Air Force CADS movement to Germany. USAFE purchased two sideloaders in early 84 under the Productivity Investment Program (PIF). These sideloaders are presently assigned to Morbach munitions depot and were used successfully to support several CADS movements in both MILVANS and SEAVANS during CY84. The Program Objective Memorandum (POM) was approved for an additional 30 sideloaders for USAFE. These sideloaders will be used throughout Europe to support CADs and ISO container moves. USAFE is on schedule to receive six of the 30 sideloaders in FY85, with the remainder arriving through FY88. An airlift validation test will be conducted in FY85. The Army in Germany will meet its inventory objective of 18 units for 20-ft container (44,800 lbs) capacity sideloaders in 3QFY85.

Program Plan: USAFE will receive all programmed sideloaders (32 total) by FY88. Army will perform market survey to establish requirements for wider application of sideloaders in the Army Logistics System.



II-15

Title: Lightweight Amphibious Container Handler (LACH)

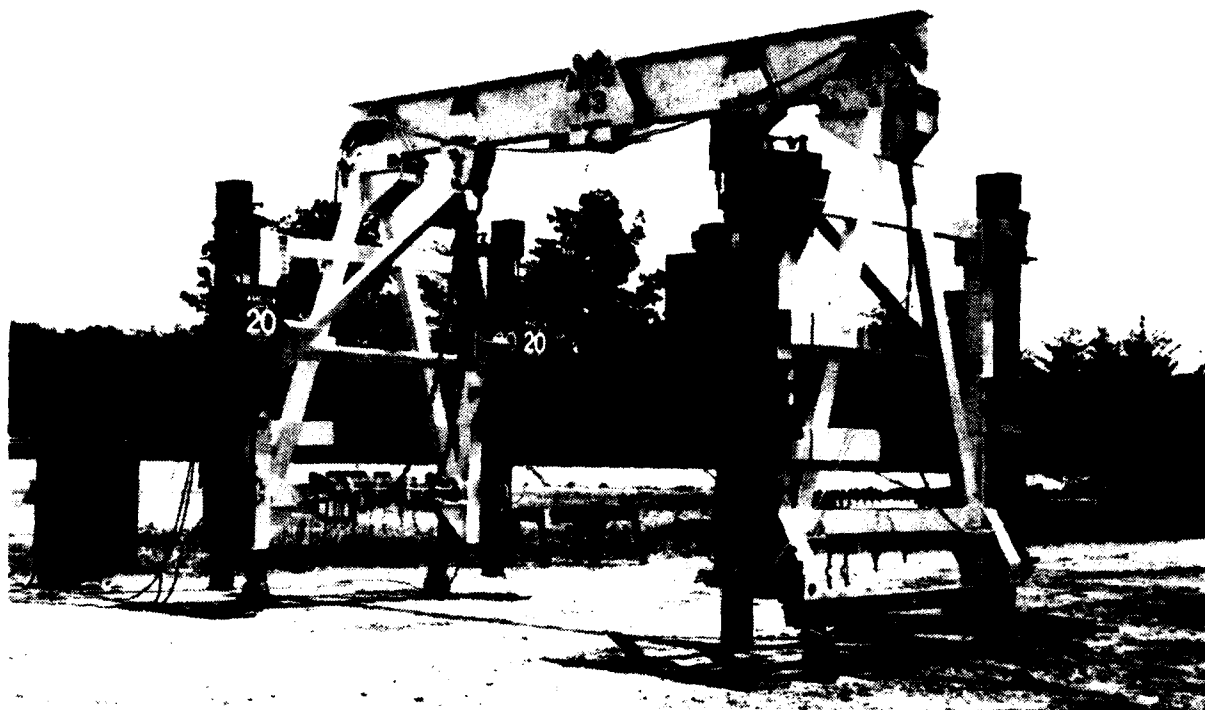
Point of Contact: Blenkle, A.J., Jr., LTC, HQ US Marine Corps/LME-1,
Washington, DC 20380, Autovon 227-6950/Commercial
(202)697-6950

Item Description: The LACH is a straddle-lift type, towed, two wheel mounted, container handler. The LACH is capable of lifting and carrying containers, ramp entry into large landing craft, and loading and unloading containers onto/from cargo trailers during amphibious operations. The LACH, when propelled by its prime mover (medium size bulldozer), can be maneuvered through five feet of surf with a 20-ft container weighing up to 50,000 lbs.

Status: Developmental and operational testing is complete. FY81 funds were appropriated for the production procurement of 56 LACH's to complete the Marine Corps inventory objective. A production contract has been awarded.

Program Plan: Deliveries of the LACH are on-going with final delivery scheduled for 4th Qtr FY85.

<u>4th Qtr 84</u>	<u>1st Qtr 85</u>	<u>2d Qtr 85</u>	<u>3d Qtr 85</u>	<u>4th Qtr 85</u>
6	12	12	13	13



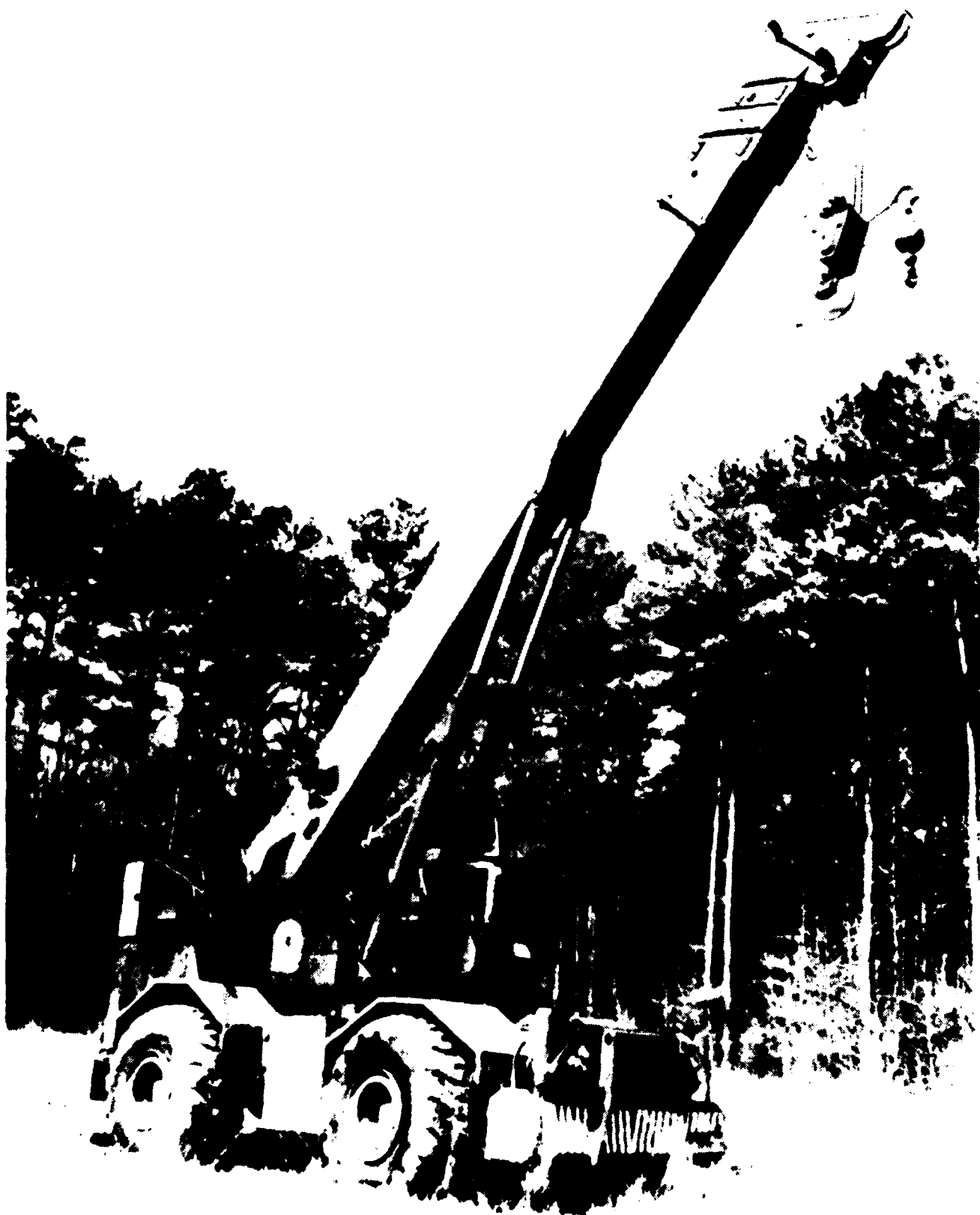
Title: Lightweight Container Handler

Point of Contact: Rodrick, E., Mr., US Army Belvoir R&D Center,
STRBE-GMR, Fort Belvoir, VA 22060-5606, Autovon 354-1143/
Commercial (703)664-1143

Item Description: The lightweight container handler is a relatively low cost, low volume handler capable of mounting/demounting 20, 24, 27, 30, 35, and 40-ft long containers from chassis/trailers. It may also be used for short distance container movement for expedient type applications. The machine/device will have limited rough terrain application.

Status: A market search was conducted to ascertain the availability of commercial equipment that meets the requirements to handle 20 through 40-ft long containers in a safe and effective manner. A contract was awarded in Sep 78 to Modular Distribution Systems, Ltd. to provide two MDS-16 jacking systems and one 40,000 lb capacity gantry crane for test and evaluation. Both pieces of equipment were successfully subjected to engineering testing and then tested by HEL at Aberdeen Proving Ground. Final report titled "Modular Distribution System Model MDS-16 20 Ton Transfer Frame System and MDS-43 Gantry Frame System" dated Sep 81. A draft requirements document was prepared 29 Mar 78, Subject: Lightweight Container Handler. The requirements document was withdrawn by TRADOC Jan 82.

Program Plan: Requirements document withdrawn; action suspended.



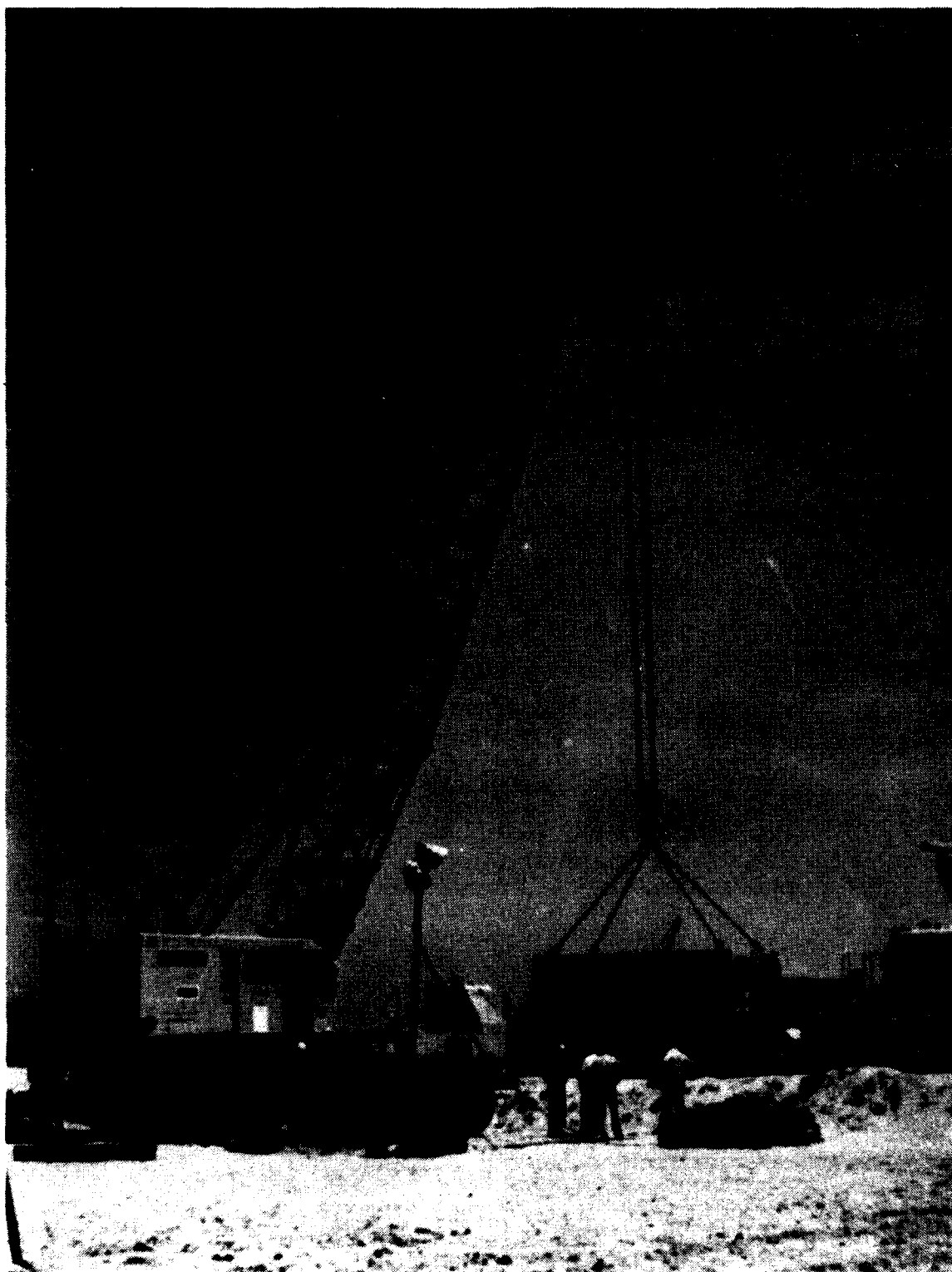
Title: Rough Terrain Container Crane (RTCC)

Point of Contact: McLean, J., Mr., US Army Belvoir R&D Center, STRBE-GMR,
Fort Belvoir, VA 22060-5606, Autovon 354-1143/Commercial
(703)664-1143

Item Description: The crane will be commercial design, truck mounted, capable of lifting a 20-ft container weighing 44,800 lbs at a radius of 27-ft and a 35/40-ft container weighing 67,200 at a radius of 22-ft. GS Ammunition units will use the RTCC "from a fixed position" for transfer of 20-ft ANSI/ISO containers from one mode of transportation to another or to ground/load containers from/to waiting transportation in the Theater and Corps ammunition storage areas. Transportation units will use the crane to augment the 50,000 lb Rough Terrain Container Handler in the transfer and handling of 20-ft, 35-ft, or 40-ft containers and other cargo between transportation modes and in storage areas.

Status: A Draft ROC has been prepared by the US Army Missile and Munitions Center and School and is currently awaiting final approval. Market survey is scheduled for completion 2Q85.

Program Plan: Prepare market survey report, and lease two (2) candidate cranes for evaluation in order to prepare a procurement specification. Prepare IPR/TC package in order to make contract award scheduled for March 1986.



140 TON MOBILE CRANE

LENGTH: W/50' BOOM: 873 IN. WEIGHT: W/120' BOOM: 195,000 LBS.
CAP: 140 TONS @ 12' WIDTH: 132.5 IN
HEIGHT: 157.8 IN.

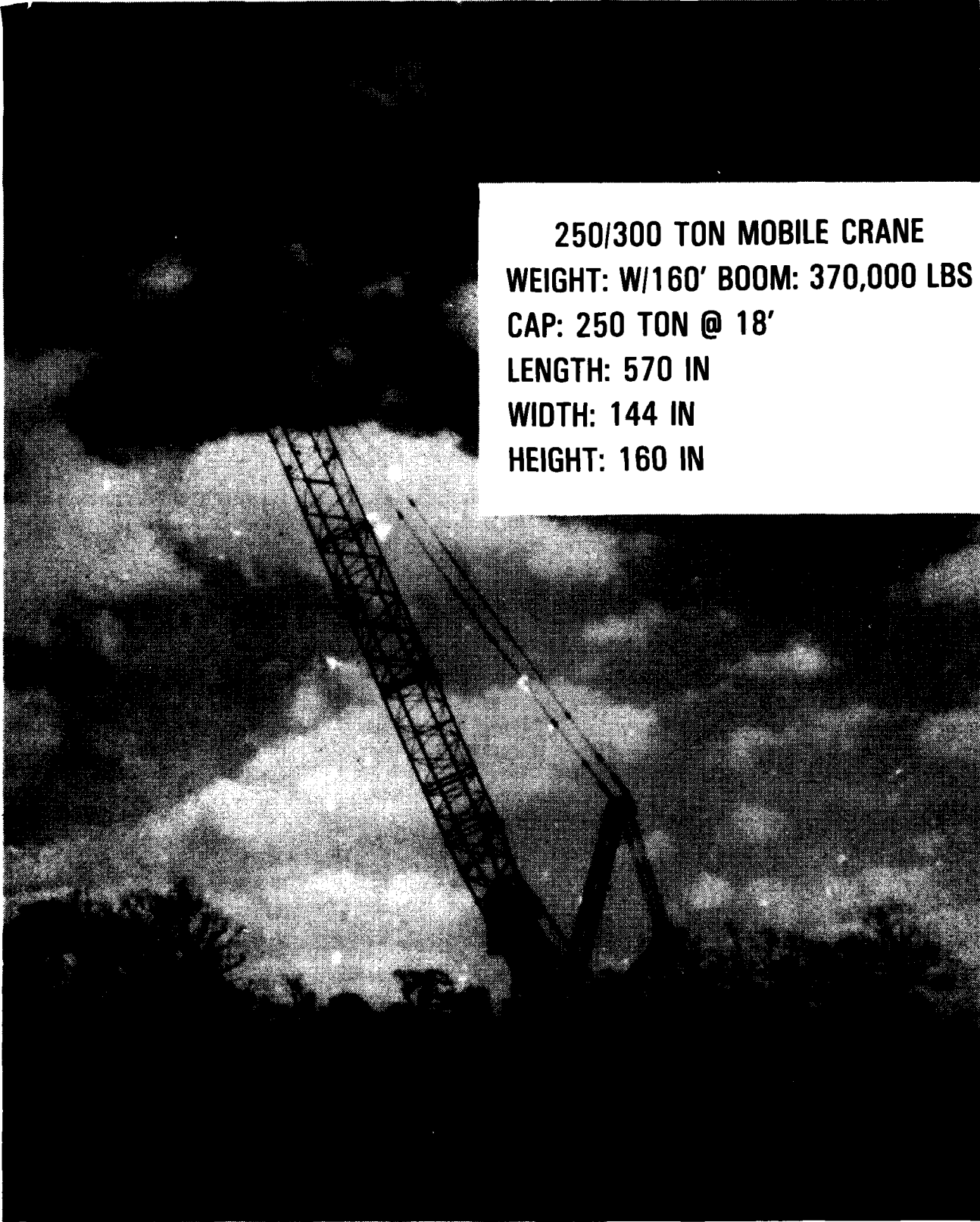
Title: 140 Ton, Truck Mounted, Container Handling Crane

Point of Contact: Shively, P., Mr., US Army Belvoir R&D Center,
STRBE-GMW, Fort Belvoir, VA 22060-5606, Autovon 354-4490/
Commercial (703)664-4490

Item Description: The crane is a commercial design, truck mounted, 140 ton maximum capacity crane. It has an 8 x 4 truck chassis and a 50-ft basic boom which can be extended in length up to 130-ft with the use of various length boom extensions. The crane is used in the discharge/retrograde of containers from ships in a fixed port operation or landing craft in a Logistics-Over-The-Shore (LOTS) operation and for handling containers in a marshalling area and terminal sites.

Status: A multi-year contract was awarded to FMC Corporation in Sep 80 for 28 cranes and deliveries began in Jan 82.

Program Plan: Current plans call for the completion of fielding the cranes in FY85.



250/300 TON MOBILE CRANE
WEIGHT: W/160' BOOM: 370,000 LBS
CAP: 250 TON @ 18'
LENGTH: 570 IN
WIDTH: 144 IN
HEIGHT: 160 IN

Title: 250/300 Ton, Truck Mounted, Container Handling Crane

Point of Contact: Shively, P., Mr., US Army Belvoir R&D Center,
STRBE-GMW, Fort Belvoir, VA 22060-5606, Autovon
354-4490/Commercial (703)664-4490

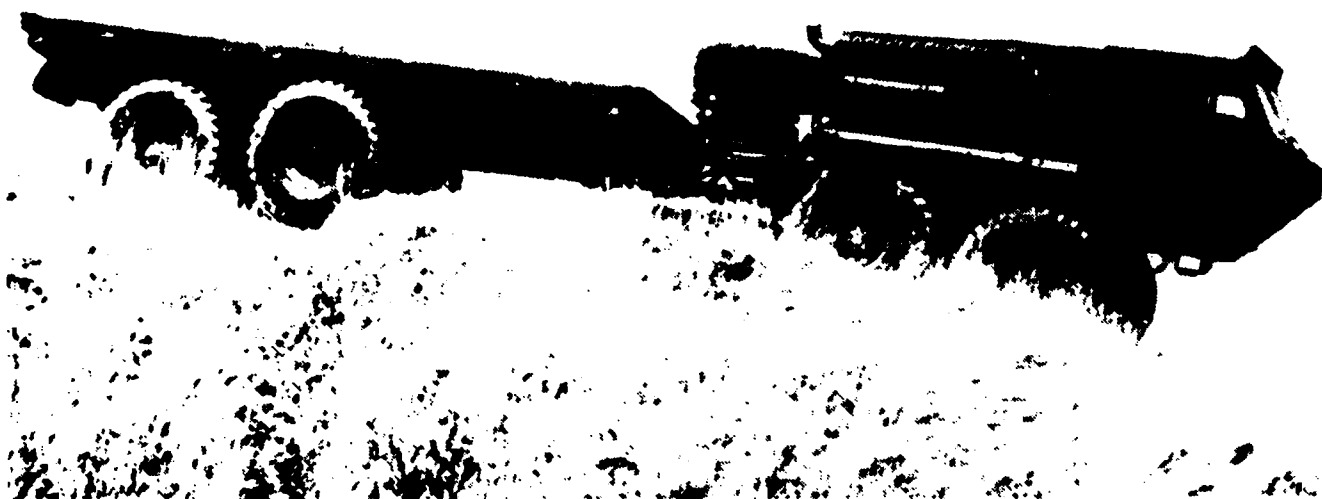
Item Description: The crane is a commercial design, truck mounted, 250 ton maximum capacity crane. It has a 12 x 6 truck chassis and a 70-ft boom which can be extended in length up to 130-ft with the use of various length boom extensions. The crane is used in the discharge/retrograde of containers from ships in a fixed port and alongside these ships on barges, piers, or floating platforms in a Logistic-Over-The-Shore (LOTS) environment. The crane is also used for the discharge/retrograde of containers from lighters over the beach in a LOTS environment.

Status: A total of eight cranes have been delivered by Harnischfeger Corporation. This satisfies the Army's total requirement. A Product Improvement Program (PIP) was approved to incorporate the Rider Block Tagline System (RBTS) developed by the Navy to minimize the pendulation problem in the sea environment. A contract to design, fabricate, install and test a RBTS prototype has been awarded. A RBTS prototype unit was installed on a 250 ton crane mounted on a "B" DeLong Barge. The RBTS was successfully tested during the FY84 J-LOTS exercise.

Program Plan: Complete technical data package on the RBTS to procure additional units for implementation to the crane. Update the technical data package for the crane for future procurements.



TRANSPORTATION EQUIPMENT



III-1

Title: Logistics Vehicle System

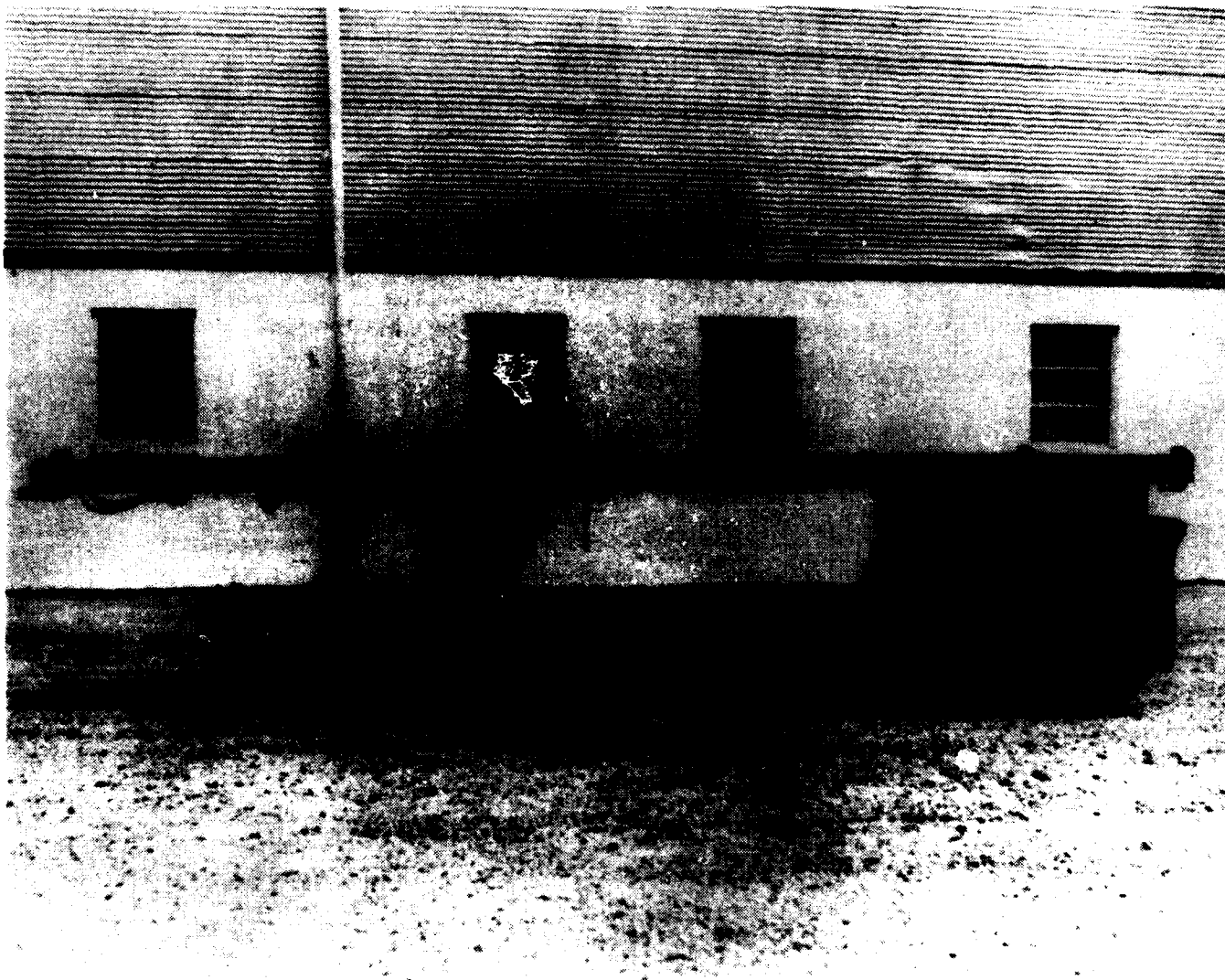
Point of Contact: Gee, D., LTC, HQ US Marine Corps/LME-1, Washington, DC
20380, Autovon 227-6950/Commercial (202)697-6950

Item Description: The Logistics Vehicle System consists of one front power unit (MK48) and one of four powered rear body unit configurations; the container hauler (MK14), the recovery/wrecker (MK15), the 5th wheel (MK16), and the dropside cargo with crane (MK17). The front power unit is the prime mover for all rear body units. The container hauler is an ISO twist-lock equipped, 22.5 ton capacity, cargo carrying, rear body unit designed to transport dimensionally standard ISO 8-ft x 8-ft x 20-ft containers, shelters, and modules. The 5th wheel rear body unit is designed to move a 70-ton heavy equipment transporter semitrailer and the 40 ton M870 semitrailer. The recovery/wrecker rear body unit designed to recover all tactical wheeled vehicles. The dropside cargo with crane has an 8-ft x 16-ft loading area that is designed as a troop carrier as well as a carrier for fuel/water modules, ammunition, and selected bulk cargo.

Status: Approval for service use for the MK48 Front Power Unit and MK14 Container Hauler Rear Body Unit was obtained in Jul 82. Approval for service use for the MK15, MK16, and MK17 Rear Body Units was obtained in Aug 83. A five-year letter contract was signed in Sep 83 for 1,433 vehicle systems.

Program Plan: Initial production testing is scheduled from Jun 83 through Feb 85 with initial delivery scheduled in Apr 85. Conditional IOC will occur during 85 with full IOC to follow in Nov 85.

	<u>FY82/83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>
MK48	139	148	354	360	443
MK14	92	58	176	110	413
MK15	14	14	26	23	0
MK16	9	34	68	138	32
MK17	27	42	84	88	0
System	139	148	354	360	443



20-FT UNIT

SINGLE BOGIE

LENGTH: 242 IN.

WIDTH: 96 IN.

HEIGHT: 53.5 IN.*

WEIGHT: 4000 LBS.

20-FT UNIT

DOUBLE BOGIE

LENGTH: 242 IN.

WIDTH: 96 IN.

HEIGHT: 53.5 IN.*

WEIGHT: 5850 LBS.

40-FT UNIT

DOUBLE BOGIE

LENGTH: 484 IN.

WIDTH: 96 IN.

HEIGHT: 53.5 IN.*

WEIGHT: 8000 LBS.

*HEIGHT WHEN UNLOADED AND SUPPORTED ON LANDING LEGS WITH DECK LEVEL

Title: Chassis, Semitrailer: Coupleable, MILVAN Container Transporter
(MILVAN)

Point of Contact: Glaza, E., Mr., US Army Tank-Automotive Command,
DRSEA-GBS, Warren, MI 48090, Autovon 786-5969/
Commercial (313)574-5969

Item Description: The MILVAN chassis were procured to attain a military owned centrally controlled fleet for movement of military cargo over primary hard surface roads principally in CONUS. The chassis consists of a 20-ft frame, landing gear, and single-axle bogie. The bogie is movable along the length of the frame. The frame has provisions for coupling two 20-ft units to form a 40-ft chassis, with the bogies under the rear frame to form a tandem-axle configuration. Each frame has twist locks to accept International Standards Organization (ISO) containers. There is provision for lowering the twist locks flush with the top of the frame so that 40-ft containers can be transported on a coupled chassis. The single bogie chassis configuration is 96-in wide, 53.5-in high, 242-in long, and weighs 4,000 lbs. The MILVAN chassis were competitively procured from industry utilizing a performance military specification.

Status: The MILVAN chassis is currently deployed. From 1969-1971, 5,620 chassis were produced; 5,100 are currently in inventory. These will be used as an interim vehicle to haul the refrigerator container in USAREUR.

Program Plan: There is no current plan to procure additional units. A four year overhaul program for 40 units began in FY84.



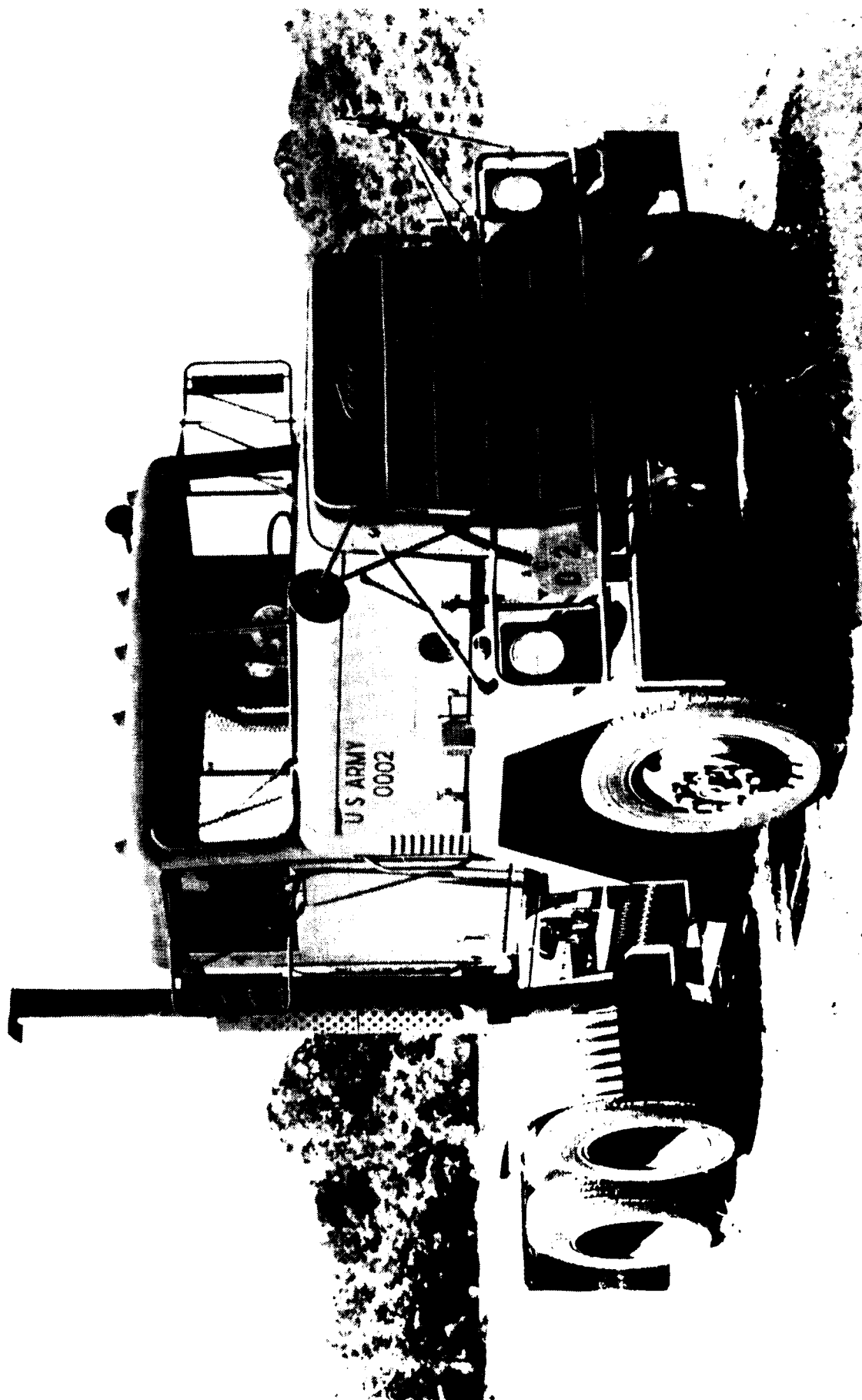
Title: Truck Tractor, Linehaul 6X4, M915

Point of Contact: Musotto, M., Mr., US Army Tank-Automotive Command,
AMCPM-TVHA, Warren, MI 48090, Autovon 786-8064/Commercial
(313)574-8064

Item Description: The M915 is the on-road prime mover for the M872 Breakbulk/Container Transporter Semitrailer (105,000 pound Gross Combination Weight Rating) and is used in linehaul operations from the port of debarkation to the division rear boundary. It partially replaces or augments the M818/M931 5-ton Tactical Tractor fleet. The M915 is part of a single procurement action which fielded a six vehicle family. The other vehicles within the combined procurement are the M916 Light Equipment Transporter, M920 Medium Equipment Transporter, M917 20-Ton Dump Truck, M918 Bituminous Distributor and M919 Concrete Mobile.

Status: Initial production vehicles were satisfactorily tested at Aberdeen Proving Ground, MD; Yuma Proving Ground, AZ; Belvoir R&D Center, VA; and the Cold Regions Test Center, AK, during the period Mar 78 through Mar 79. Four vehicles with companion M872 semitrailers satisfactorily completed Force Development Test and Evaluation (FDTE) at Ft. Campbell, KY between Jan and Apr 79. Production was completed in Jun 80 and the entire fleet of 2,498 vehicles has been fielded.

Program Plan: Provide support for fielded items.



Title: Truck Tractor, Linehaul 6X4, M915A1

Point of Contact: Musotto, M., Mr., US Army Tank-Automotive Command,
AMCPM-TVHA, Warren, MI 48090, Autovon 786-8064/
Commercial(313)574-8064

Item Description: The M915A1 is a military adaptation of a commercial 6X4 tractor and is a rebuy of the M915. It has been improved to include state-of-the-art advances in heavy truck technology. It is intended for linehaul operation from the port of debarkation to the division rear boundary. While the M915A1 is used primarily with the M872 semitrailers, it is capable of operating with a variety of military and commercial trailers.

Status: AM General produced 2,342 M915A1s. Deployment to USAREUR, US Army Reserve and Army National Guard was made between Aug 83 and Jul 84 to 37 Medium Transportation Companies.

Program Plan: Provide support for fielded items.



CURB WEIGHT: 16,280 LBS.
OVERALL LENGTH: 182.5 IN.
OVERALL WIDTH: 98.125 IN.

OVERALL HEIGHT: 120 IN.
WHEEL BASE: 116 IN.
FIFTH WHEEL HEIGHT: 48 IN. TO 64 IN.

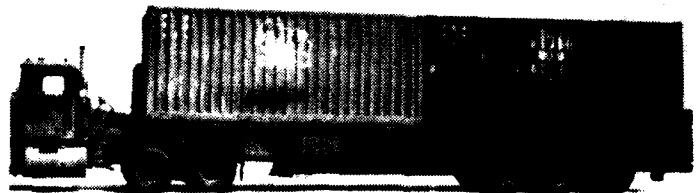
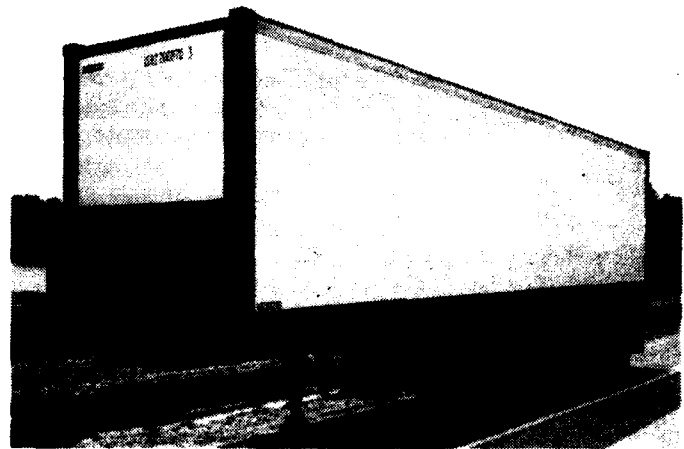
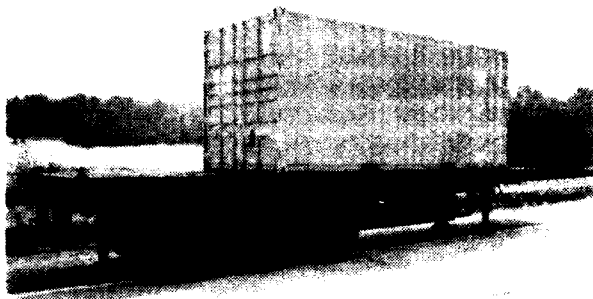
Title: Truck Tractor, Yard Type, 4X2, M878A1

Point of Contact: Carlisle, G. Mr., Tank-Automotive Command, AMSTA-FTM,
Warren, MI 48090, Autovon 786-8500/Commercial
(313)574-8500

Item Description: The yard type truck tractor is primarily used to provide a capability to shuttle semitrailers loaded with containers or breakbulk cargo within fixed ports, prepared beaches Logistics-Over-the-Shore (LOTS), or trailer transfer areas. The vehicle is a highly maneuverable commercial tractor with an automatic locking, hydraulic-lift fifth wheel which facilitates semitrailer coupling and disengagement, and allows movement of the semitrailer/chassis without retracting landing legs.

Status: Twenty-eight trucks were competitively procured from Ottawa Truck Company for use during Joint-Logistics-Over-the-Shore (J-LOTS) testing in 1977. Based on the favorable results of this test, 16 additional trucks were ordered. The truck has passed its First Article Test and a third buy contract was awarded to Ottawa Truck for a quantity of 175. Sixty-six trucks were issued to meet CONUS requirements. Remaining trucks are in long-term depot storage.

Program Plan: Issue of 21 trucks to USAREUR is planned for 4QFY85. FY86 Logistics Unit Productivity Study (LUPS) requirement of 54 vehicles will be met from trucks in depot storage. Procurement of additional trucks is not planned at this time.



CURB WEIGHT: 17,400 LBS.
RATED PAYLOAD: 67,200 LBS.
GROSS WEIGHT: 84,600 LBS.
OVERALL LENGTH: 489 IN.
OVERALL WIDTH: 96 IN.
PLATFORM HEIGHT: 59 IN.*
FIFTH WHEEL HEIGHT: 50 IN. (LOADED)

***HEIGHT WHEN UNLOADED AND SUPPORTED ON LANDING LEGS WITH DECK LEVEL**

TIRES: 10:00 x 20 TUBE TYPE
BRAKES: CAM/AIR
ELECTRICAL: 12/24 VOLT
LANDING GEAR: HAND/MECHANICAL
SIDE PANEL HEIGHT: 48 IN.
CONTAINER LOCKS: 20', 35', 40',
24', 5, 6½, AND 10'

Title: Semitrailer, Linehaul, Breakbulk/Container, M872 Series

Point of Contact: Musotto, M., Mr., US Army Tank-Automotive Command,
AMCPM-TVHA, Warren, MI 48090, Autovon 786-8064/Commercial
(313)574-8064

Item Description: The M872 Semitrailer Series are commercial design flatbed semitrailers of 34 ton capacity that are used in the linehaul of containers, breakbulk cargo and M113 APCs. The M915/M915A1 truck tractor is the prime mover.

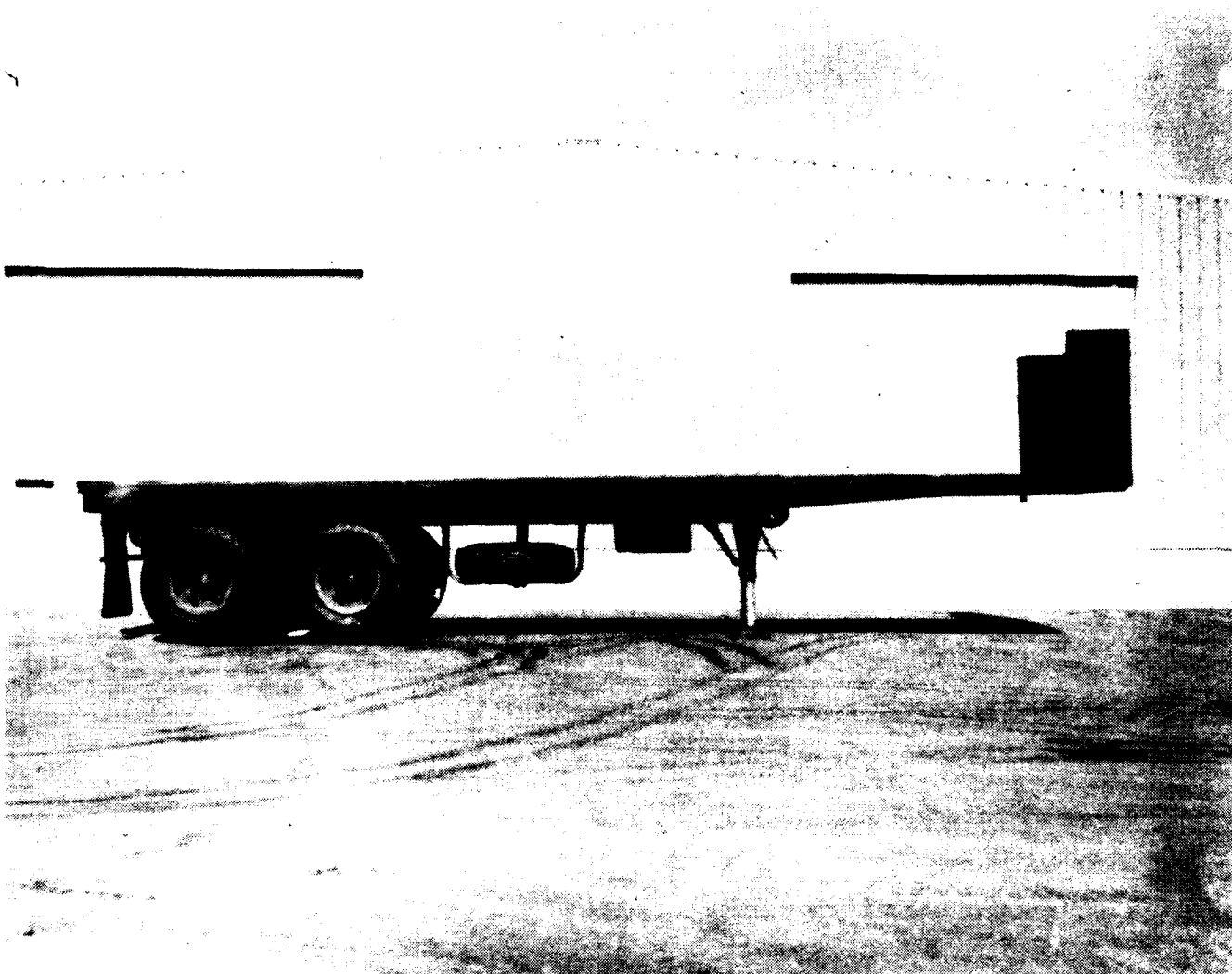
Status: Procurement of the total requirement of 8,656 semitrailers was accomplished by five separate contracts as follows:

<u>MODEL</u>	<u>CONTRACTOR</u>	<u>QUANTITY</u>
M872	Theurer	1,364
M872	Southwest	1,304
M872A1	Theurer	2,713
M872A1	Heller	212
M872A2*	Theurer	125
M872A2*	Heller	125
M872A3	Southwest	2,813
		<u>8,656</u>

* Model M872A2 has a tapered gooseneck configuration which has been modified by installing a saddle to the gooseneck.

All contracts except the Southwest contract are complete. Southwest is currently in production at a rate of 110/month.

Program Plan: Perform necessary actions as required to complete overall production contracts.



RATED PAYLOAD: 44,800 LBS.

OVERALL LENGTH: 358 IN.

OVERALL WIDTH: 96 IN.

PLATFORM HEIGHT: 55 IN.*

TIRES: 11:00 x 20

ELECTRICAL: 12/24 VOLT

LANDING GEAR: HAND/MECHANICAL

SIDE PANEL HEIGHT: 48 IN.

**CONTAINER LOCKS: 20', 10'
6 $\frac{2}{3}$ ', AND 5'**

***HEIGHT WHEN UNLOADED AND SUPPORTED ON LANDING LEGS WITH DECK LEVEL**

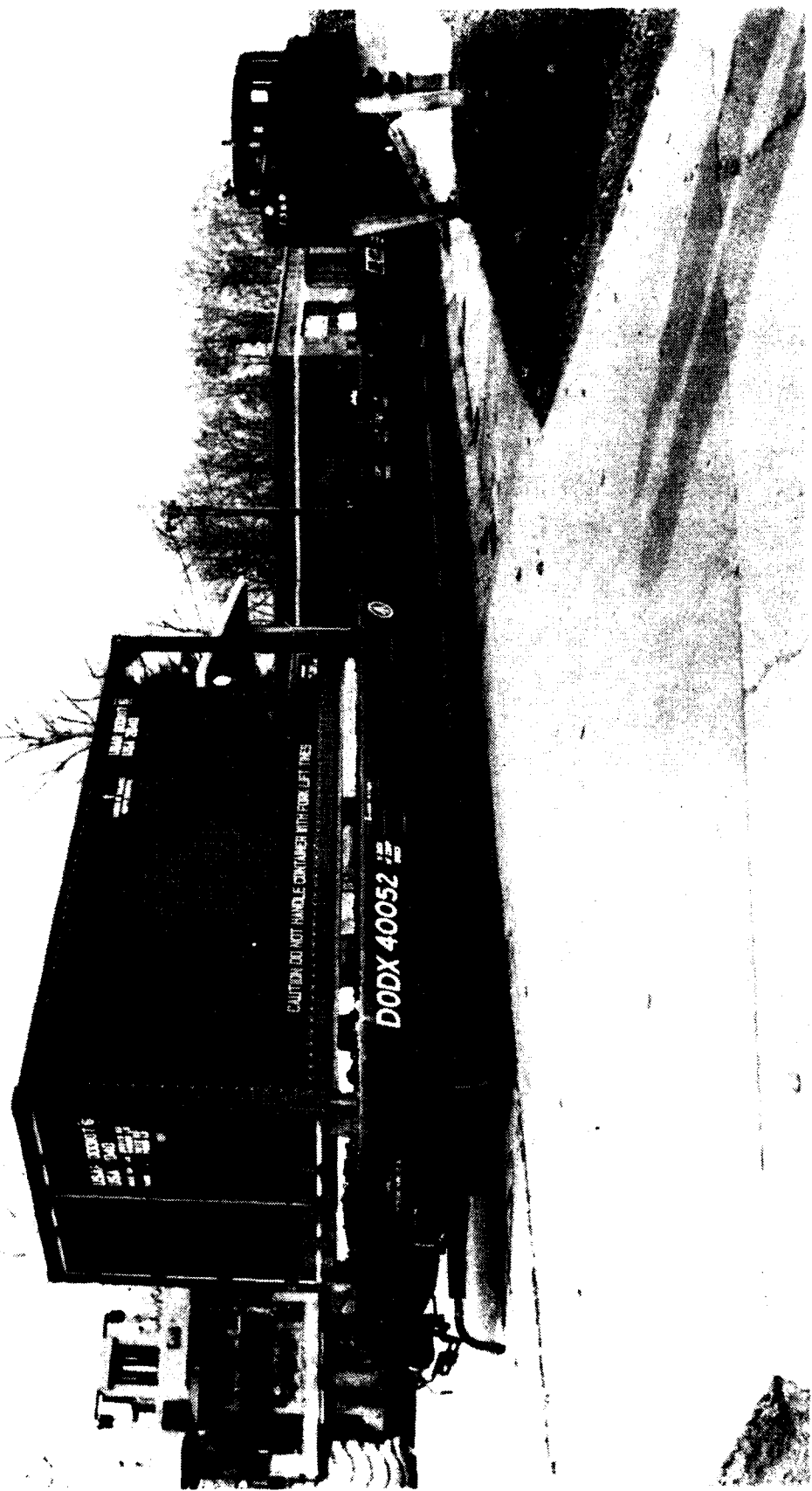
Title: Semitrailer, Tactical, Dual Purpose Breakbulk/Container
Transporter 22-1/2 Ton, M871

Point of Contact: Taube, G., Mr., US Army Tank-Automotive Command,
AMCPM-TVHE, Warren, MI 48397-5000, Autovon 786-8064/
Commercial (313)574-8064

Item Description: The M871 is a commercial design tactical semitrailer whose primary application will be the delivery and retrograde of containers and shelters up to 20-ft in length and breakbulk cargo in an overseas theater of operation between the Corps General Support Supply Activities (GSSA) and the Division Support Command (DISCOM). On occasion it may also be used to deliver containers to forward distribution points or to using units. The prime mover in these roles will be the M818, M915 and M932 truck tractors. The tactical semitrailer will also be used on the linehaul mission as a means of clearing 20-ft or smaller containers from the port area. The prime mover in this role will normally be the M915 linehaul tractor.

Status: A flatbed configuration was selected by the Logistics Center in Dec 77, after consideration was given to the conflicting requirements dictated by breakbulk and container transport mission. A five-year multi-year contract was awarded to Southwest Truck Body in Mar 79 for a quantity of 2,349 trailers. Initial Production Testing was completed Aug 80 and initial delivery to Anniston Army Depot for storage started in Jun 80. The option was exercised to procure an additional unit with the missile tie-down fixtures.

Program Plan: The original plan was to conduct a development program to attain a suitable drawing package for subsequent competitive production procurements. Plan was revised to procure a commercial design trailer. Selected components will be pre-specified to maximize commonality with other trailers within the Army's fleet. A three-year procurement for 568 trailers is planned beginning in FY84.



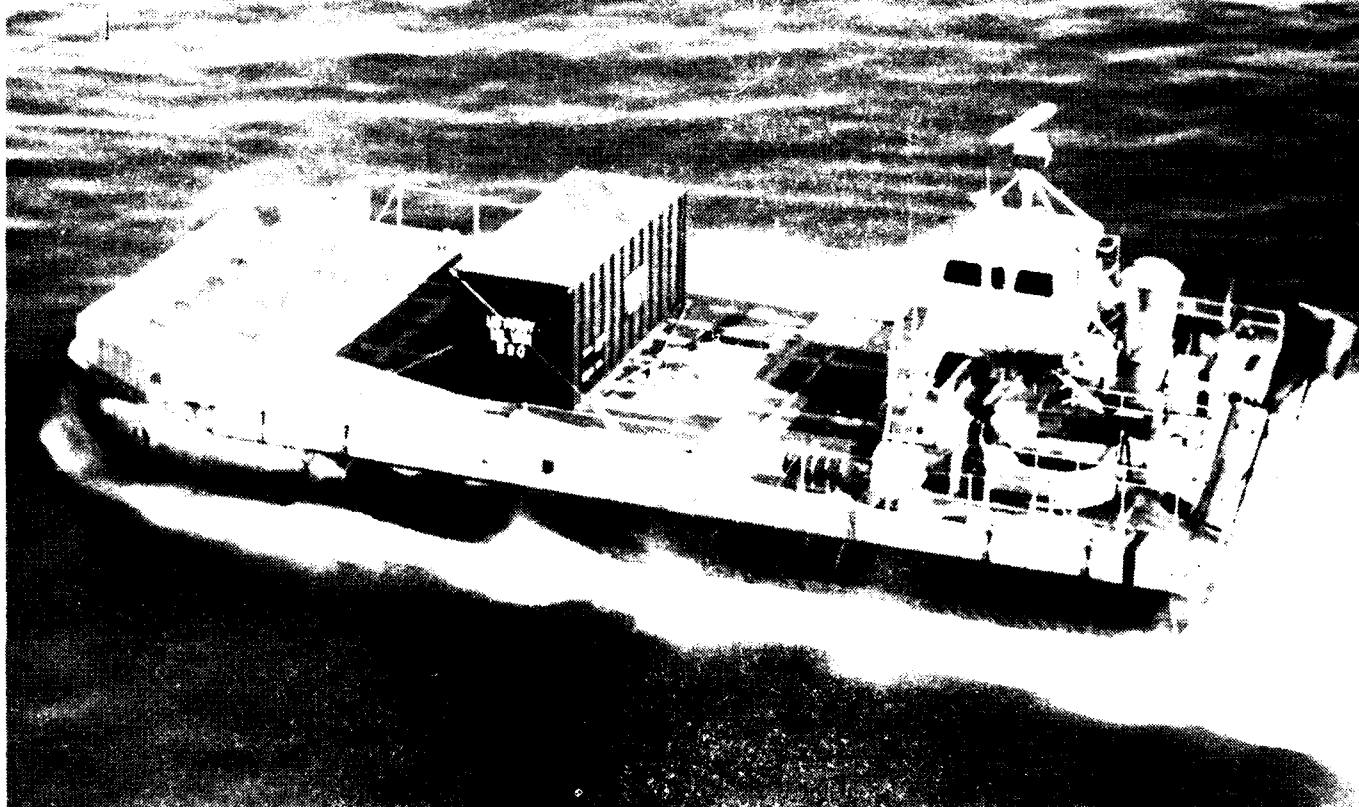
Title: Railway Car, Flat, (Heavy Duty) 140 Ton Capacity, DS

Point of Contact: Boynton, M., Ms., US Army Belvoir R&D Center,
STRBE-GMM, Fort Belvoir, VA 22060-5606, Autovon 354-5581/
Commercial (703)664-5581

Item Description: The 140 ton flat car is designed for unrestricted interchange use while transporting both oversized tracked vehicles and multiple ANSI/ISO Containers loaded with Class A explosives and other commodities. Of welded construction, the all-steel car is equipped with integral securement systems to restrain both kinds of lading. For intermodal containers, the securement system will accommodate a single 40-ft container, three 20-ft containers, or a combination of both sizes. The tiedown units are of the pedestal type that lock automatically when the container is set in place and release automatically when the containers are lifted. The flat car is approximately 68-ft long and 10-ft 5-in wide and is supported by two three-axle trucks. The car is designed to carry up to a 140 ton load.

Status: Two production contracts yielding 245 cars have now been completed. A third multi-year contract is presently underway to buy 324 additional units.

Program Plan: Another contract for 123 cars is scheduled for award in FY89. This will fulfill mission requirements as presently identified.



LENGTH: 76 FT. 3 IN.
WIDTH: 36 FT. 8 IN.
DECK LENGTH: 51 FT. 6 IN.
DECK WIDTH: 32 FT. 6 IN.
HEIGHT (HOVERING): 28 FT. 11 IN.
CARGO DECK HEIGHT: 3 FT. 11.5 IN.

DESIGN GROSS WEIGHT: 57,344 LBS.
SPEED AT MAX CONTINUOUS POWER:
40 MPH @ ALL-UP WEIGHT
ENDURANCE: APPROX 5 HRS OF
LOGISTICS-OVER-THE-SHORE W/25
TON PAYLOAD

**LOTS, HARBOR, &
CONTAINER OFFLOADING
AND
TRANSFER EQUIPMENT
SYSTEM**

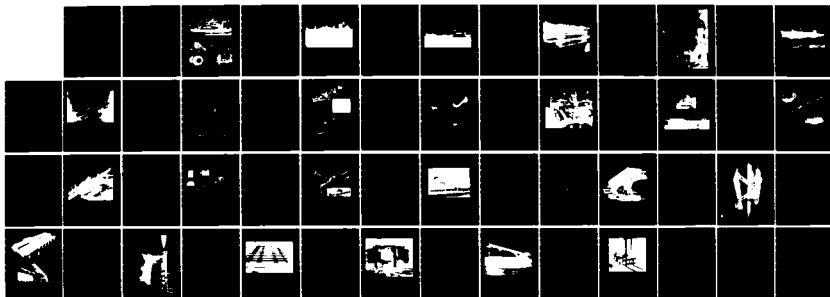
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CONTAINER SYSTEM HARDWARE STATUS REPORT(U) ARMY BELVOIR 2/2
RESEARCH AND DEVELOPMENT CENTER FORT BELVOIR VA
S JOHNSON JAN 85

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MICROCOPY RESOLUTION TEST CHART
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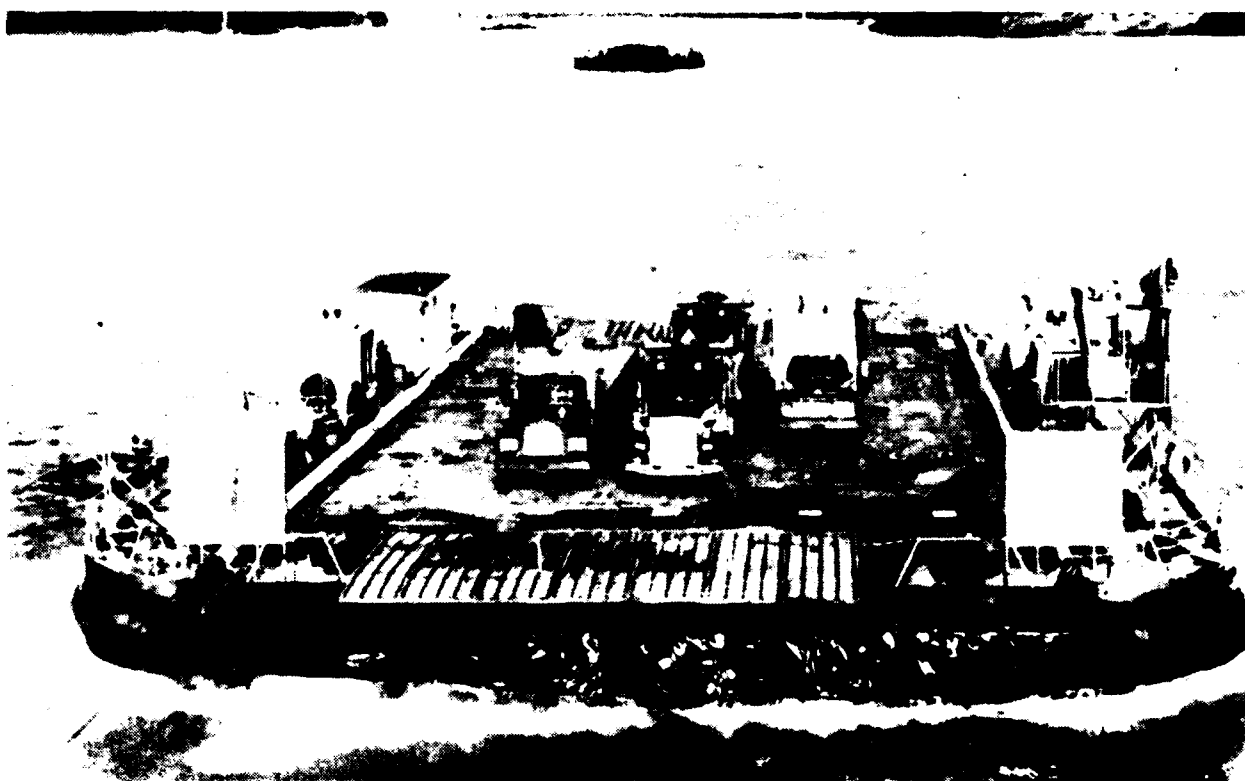
Title: Lighter Air Cushion Vehicle, 30 Ton (LACV-30)

Point of Contact: Perkins, J., Mr., US Army Belvoir R&D Center,
STRBE-GRD, Fort Belvoir, VA 22060-5606, Autovon 354-5498/
Commercial (703)664-5498

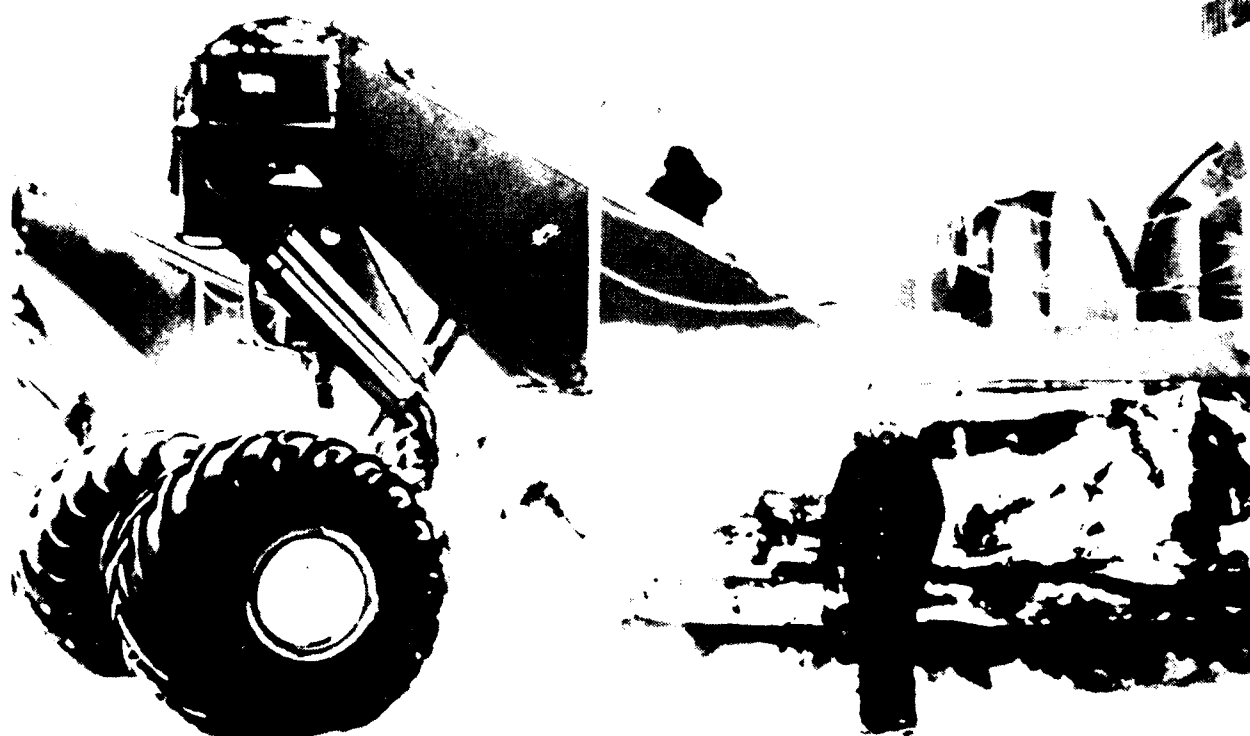
Item Description: This vehicle is a military adaptation of the Bell Aerospace Co. air cushion vehicle "Voyageur" for use primarily in Logistics-Over-the-Shore (LOTS) operations. It is used to provide the logistical system with a rapid lift capability of moving cargo and equipment over water, marginal areas, beaches, ice, snow and land. The LACV-30 provides a method of augmenting congested port facilities or replacing lost or reduced port capabilities. The LACV-30 is also intended to support secondary missions such as coastal, harbor, inland waterway operations, support of amphibious operations, ship-to-shore operations, transport operations and search and rescue operations. The LACV-30 can negotiate sea state 2 and 8-ft plunging surf.

Status: Two prototype craft were built and successfully passed operational and development tests. The LACV-30 has been approved for Army use. A contract for 12 craft was awarded Bell Aerospace Textron and Bell Aerospace Canada Textron in 1979. Production of the first 12 craft is finished. The first 12 production craft are operational with initial operational capability achieved in Sep 82. A second contract for LACV-30's was awarded to Bell Aerospace in Sep 82. The first 12 craft were turned over to 331 Transportation Company at Fort Story. Follow-on evaluation was conducted in FY83.

Program Plan: Turn over next 12 crafts to new Transportation Company to be organized at Fort Story.



WINCH PROPELLED AIR CUSHION BARGE



WHEEL PROPELLED AIR CUSHION BARGE

Title: Lighter Amphibian, Heavy Lift (LAMP-H)

Point of Contact: David, B., Mr., US Army Belvoir R&D Center, STRBE-GRD,
Fort Belvoir, VA 22060-5606, Autovon 354-5498/
Commercial (703)664-5498

Item Description: The US Army Trans-Hydro craft study 1975-1985 identified and validated a requirement for a heavy lift amphibious lighter. The lighter will have the basic mission in movement of beach cranes, front end loaders, and other outsized materials handling equipment to establish beach operations. It will also have the mission of resupply of tanks, vehicles, and containers. The craft will be an air cushion type to insure negotiation of beach barriers with an open cargo deck to accept load transfer from a cargo ship and equipped with a ramp for Roll On/Roll Off (RO/RO) discharge systems. The LAMP-H will replace the LARC-LX.

Status: A Letter of Agreement (LOA) was approved 24 May 1982. A concept evaluation of existing craft was conducted during the FY83-84 timeframe to determine the optimum candidate to satisfy the requirements on the assumption of using the modified non-developmental approach to accelerate acquisition and fielding. A modified air cushion barge configuration proved to be the optimum candidate in satisfying the Army requirements.

Program Plan: A Required Operational Capability (ROC) for the LAMP-H is scheduled for completion 3QFY85. A prototype contract award is scheduled for 3QFY85. Testing and evaluation will be conducted FY87. Production quantities of 14 LAMP-H vehicles is planned for the FY88-91 timeframe.



IV-3

Title: Logistics Support Vessel (LSV)

Point of Contact: Lipari, M., Mr., US Army Belvoir R&D Center,
STRBE-GRS, Ft Belvoir, VA 22060-5606
Autovon 354-5971/Commercial (703)664-5971

Item Description: The LSV will have the capability of intratheater line haul of cargo to support the unit deployment/relocation, tactical and sustained resupply to remote, undeveloped areas along coastlines and on inland waterways. Mission requirements include the capability to assist in discharging and backloading ships in a Roll-On/Roll-Off (RORO) or Logistics-Over-The-Shore (LOTS) operations, particularly with container handling equipment, vehicular and other oversize, overweight cargo, as well as the capability to load, transport and off-load bulk liquid cargo. The vessel will have a self-delivery range of 5500 nautical miles at full load and 12 knott service speed. Displacement of the LSV will range between 3000-5500 Long Tons, with a maximum length and beam of 300' and 60' respectively. Minimum cargo deadweight in the full load condition is 2000 short tons. The LSV will have beaching capability, twin or triple screw diesel propulsion, bow and stern ramps, and deck sockets for accomodating containerized cargo.

Status: Issue of the Request for Proposals is expected during 2Q85, with a projected Contract Award by 4Q85.

Program Plan: The LSV program plan includes procurement of 4 ships, the last of which is projected for delivery in 1989.



IV-4

Title: Landing Craft, Utility (LCU)

Point of Contact: Lipari, M., Mr., US Army Belvoir R&D Center,
STRBE-GRS, Fort Belvoir, VA 22060-5606,
Autovon 354-5971/Commercial (703)664-5971

Item Description: The Non-Development Item (NDI) LCU will be used to transport tracked and wheeled vehicles, as well as general cargo and containers in ocean, coastal and inland waterway operations involving landing on remote, underdeveloped coastlines. The vessel will have the capability to assist in discharging and backloading ships in a Roll-On/Roll-Off (RORO) or Logistics-Over-The-Shore (LOTS) effort by lightering cargo between ship and shore and terminal areas not accessible to deep draft oceangoing vessels. The LCU will have a self-delivery range of 4500 nautical miles at full load and 10 knot minimum service speed. Cargo deadweight in the full load condition is 350 short tons, with a maximum length of 155' and beam of 36'. The LCU will have a minimum 2000 square feet of cargo deck area which will be fitted with flush type sockets to allow for maximum loading of ISO standard freight containers.

Status: Issue of the Request for Proposals is expected during 3Q85, with an expected Contract Award date by the end of FY85.

Program Plan: The LCU program plan includes procurement of 40 craft, the last of which are projected for delivery in 1990.



IV-5

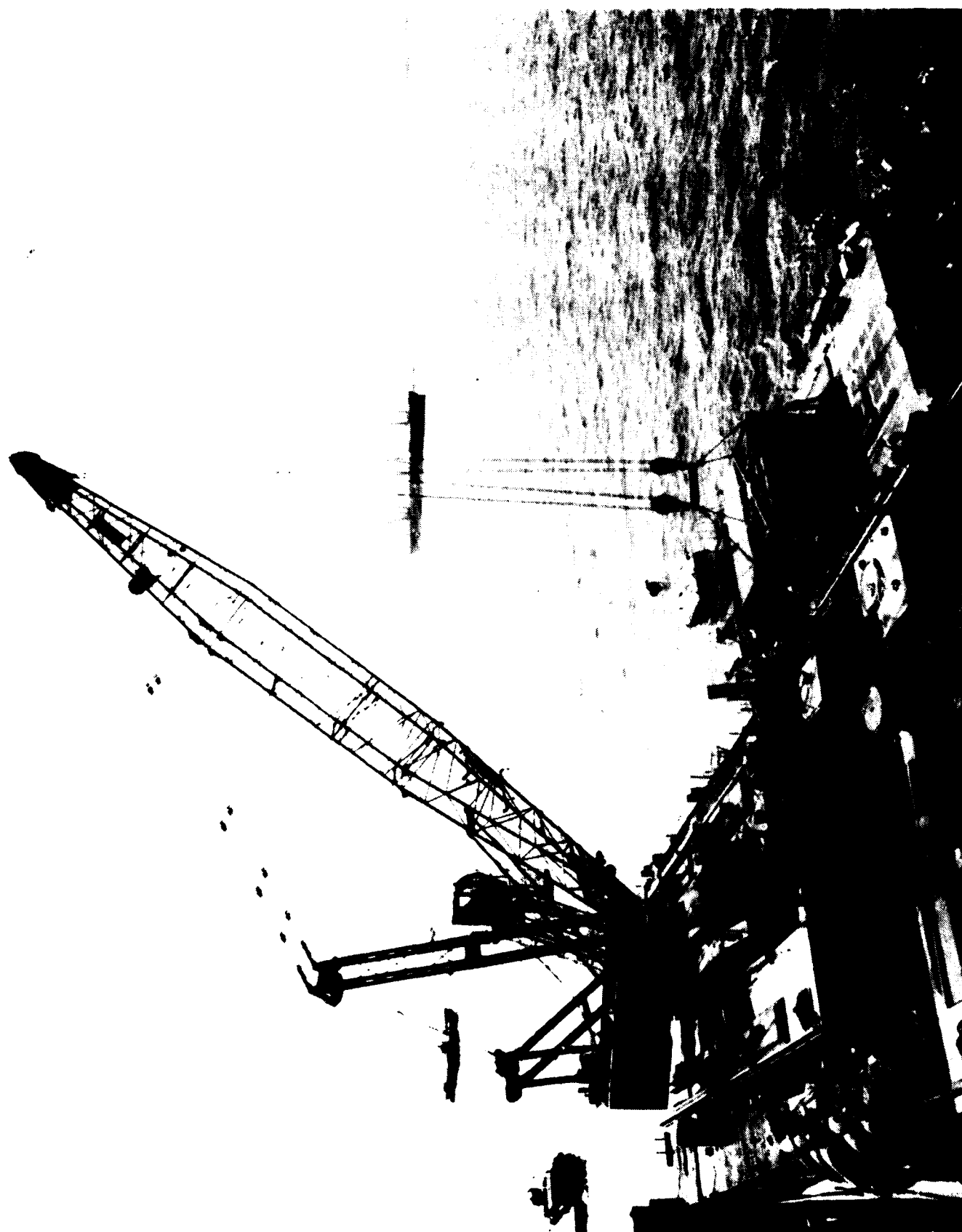
Title: Barge, Knockdown, Rapidly Deployable (BK)

Point of Contact: Lipari, M., Mr., US Army Belvoir R&D Center,
STRBE-GRS, Fort Belvoir, VA 22060-5606, Autovon 354-5319/
Commercial (703)664-5319

Item Description: The BK will provide the US Army with the capability to redeploy barges to areas of operations by surface and air, commercial and military transportation, once disassembled into sections or modules and accessories. It provides flexibility to configure various size lighters, causeway platforms, finger piers, work platforms, or small craft floats. The many configurations will be capable of being towed, pushed, or self-propelled with the addition of power units. Normal operations will be in harbor areas or in protected waters. In the platform configuration the sections can be used to provide crane platforms, alongside ship or at the shore end of floating storage areas. The individual modules are expected to be constructed of steel and configured for transport in containerships. They will be capable of transporting 225 tons of containers and all classes of supply including wheeled and tracked vehicles and container handling equipment when assembled into a 32-ft by 120-ft barge.

Status: Program has been cancelled.

Program Plan: To be determined.



IV-6

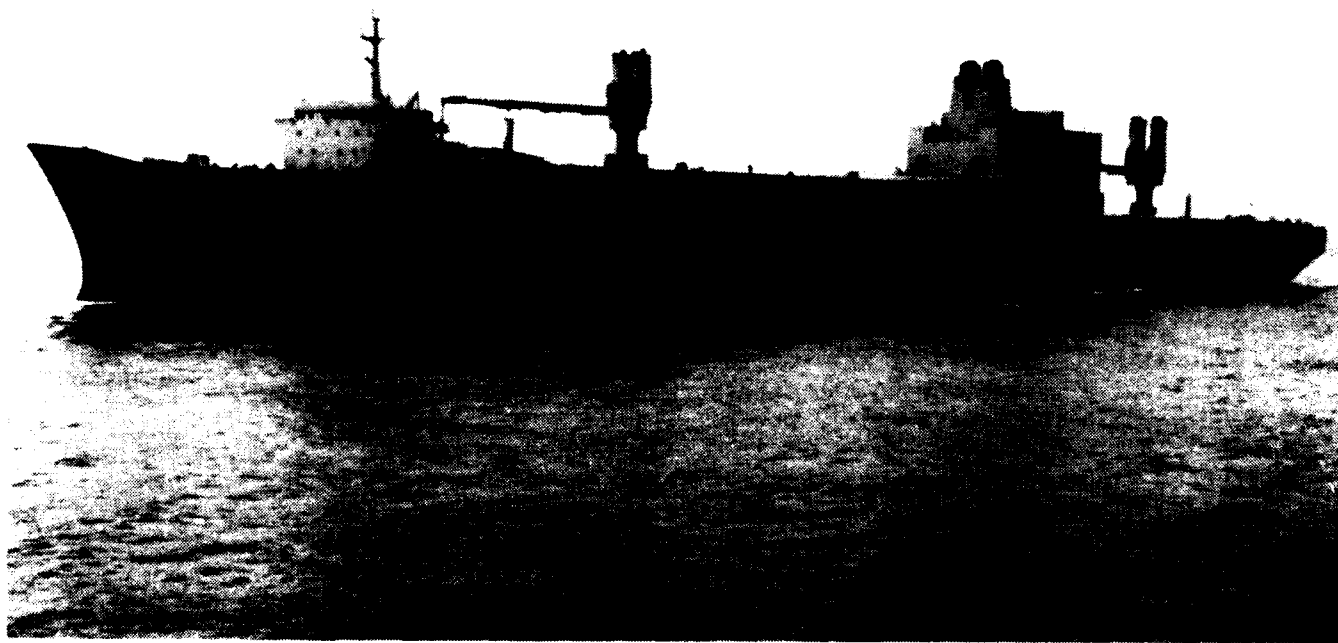
Title: Temporary Container Discharge Facility (TCDF)

Point of Contact: Shively, P., Mr., US Army Belvoir R&D Center,
STRBE-GMW, Fort Belvoir, VA 22060-5606,
Autovon 354-4490/Commercial (703) 664-4490

Item Description: The TCDF is comprised of the Army's 250-ton, truck mounted, container crane mounted on a 'B'-DeLong barge. The TCDF is to be used for the discharge of containers from non-self sustaining container ships within a non-port environment. The crane is supported on two bridging beams and uses the reduced load bearing Malkiel Float assembly. The crane on barge configuration is capable of handling 67,200 lbs (30.5 Mg) at 65-ft (19.8 M) in sea conditions up to and including sea state 3. A SEABEE class surface vessel will be used to transport the TCDF to its operating theater as the 'B'-DeLong barge is structurally inadequate for safe ocean tow with a mounted crane.

Status: A securing system was implemented to the TCDF for overseas transport on a SEABEE class surface vessel. The securing system was implemented by VSE Corporation based on a study conducted by J.J. Henry Co., Inc. This effort was completed on 1 Apr 84. The securing system was successfully tested during the deployment phase of the FY84 J-LOTS II exercise, 15 Apr 84 - 4 May 84. The crane on barge was adapted with a prototype Rider Block Tagline System (RBTS). The installation of the RBTS was performed by Columbia Research Corporation. This effort was completed on 20 Sep 84. The RBTS was successfully tested during the off-shore container handling portion of the FY84 J-LOTS II exercise, 11-17 Oct 84.

Program Plan: Technical Data Package's for the securing system and the RBTS will be finalized for future competitive procurements.



IV-7

Title: Fast Logistic Ship Program (T-AKR)

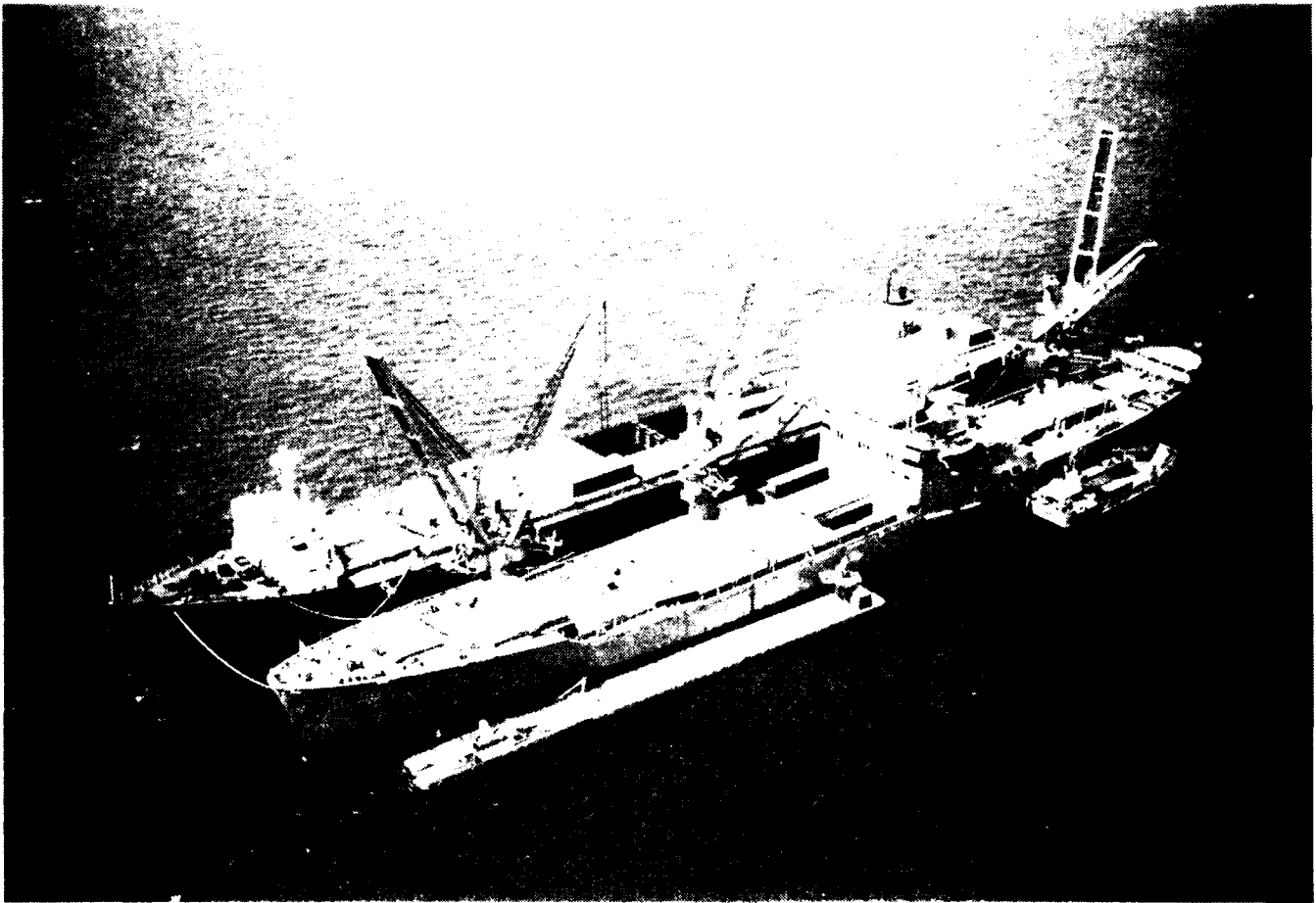
Point of Contact: Lisiewski, R., Mr., Naval Sea Systems Command
(PMS-377N), Washington, DC 20362,
Autovon 222-8513/Commercial (202)692-8513

Item Description: The Fast Logistic Ship (T-AKR) program includes the procurement of eight SL-7 class high-speed containerships and their subsequent conversion to a cargo configuration specifically designed for rapid load/unload of military vehicles and equipment, including tanks and helicopters. T-AKR ships will enhance the ability to quickly deploy military equipment and supplies from the continental United States to potential objective areas throughout the world. The conversion design includes installation of decks midship to permit Roll-on/Roll-off of vehicles, addition of a flight deck for helicopter operations, and retention of the existing container cells aft. The T-AKR provides the capability to transport in the aft part of the ship 78 special-purpose heavy-duty flatracks, 53 (35'L x 8'W x 13.5'H), 22 (35'L x 8'W x 10.25'H), 3 (35'L x 8'W x 8.5'H), 46 containers (20'L x 8'W x 8'H)*, and 8 SEASHEDs (35'L x 25'W x 12.5'H). The 35-ft special-purpose flatracks were designed specifically for use on-board the T-AKR and are capable of carrying an M-1 tank (134,000 lb) across two adjoining flatracks. These flatracks have been designed with hinged edge flaps installed along one side to provide the ability to span the gaps between flatracks in container cells resulting basically in a series of "tween decks".

Status: Contracts for conversion of four SL-7 ships were awarded in September 1982 to three shipyards with options for four additional ship conversions: Avondale Shipyards Inc. (1 firm, 2 options), National Steel and Shipbuilding Co. (2 firm, 1 option) and Pennsylvania Shipbuilding Co. (1 firm, 1 option). The first four T-AKR ships were all re-delivered by September 1984. The options for conversion of the remaining four ships were exercised on 31 October 1983. Deliveries of SEASHEDs and Flatracks to the eight T-AKR ships were completed in September 1984. Each T-AKR is also equipped with two 35-ft spreaders, two 20-ft spreaders and one 40-ft spreader to enhance load/offload operations.

Program Plan: The four remaining T-AKR ships are scheduled for re-delivery to the Government in the following sequence: two ships by 31 October 1985, 1 ship by 28 November 1985, and 1 ship by 31 March 1986.

* 44 containers (20'L x 8'W x 8'H) on USNS ALGOL (T-AKR 287), USNS BELLATRIX (T-AKR 288) and USNS REGULUS (T-AKR 292).



IV-8

Title: Auxiliary Crane Ship (T-ACS)

Point of Contact: Lisiewski, R., Mr., Naval Sea Systems Command
(PMS-377N) Washington, DC 20362, Autovon
222-8513/Commercial (202)692-8513

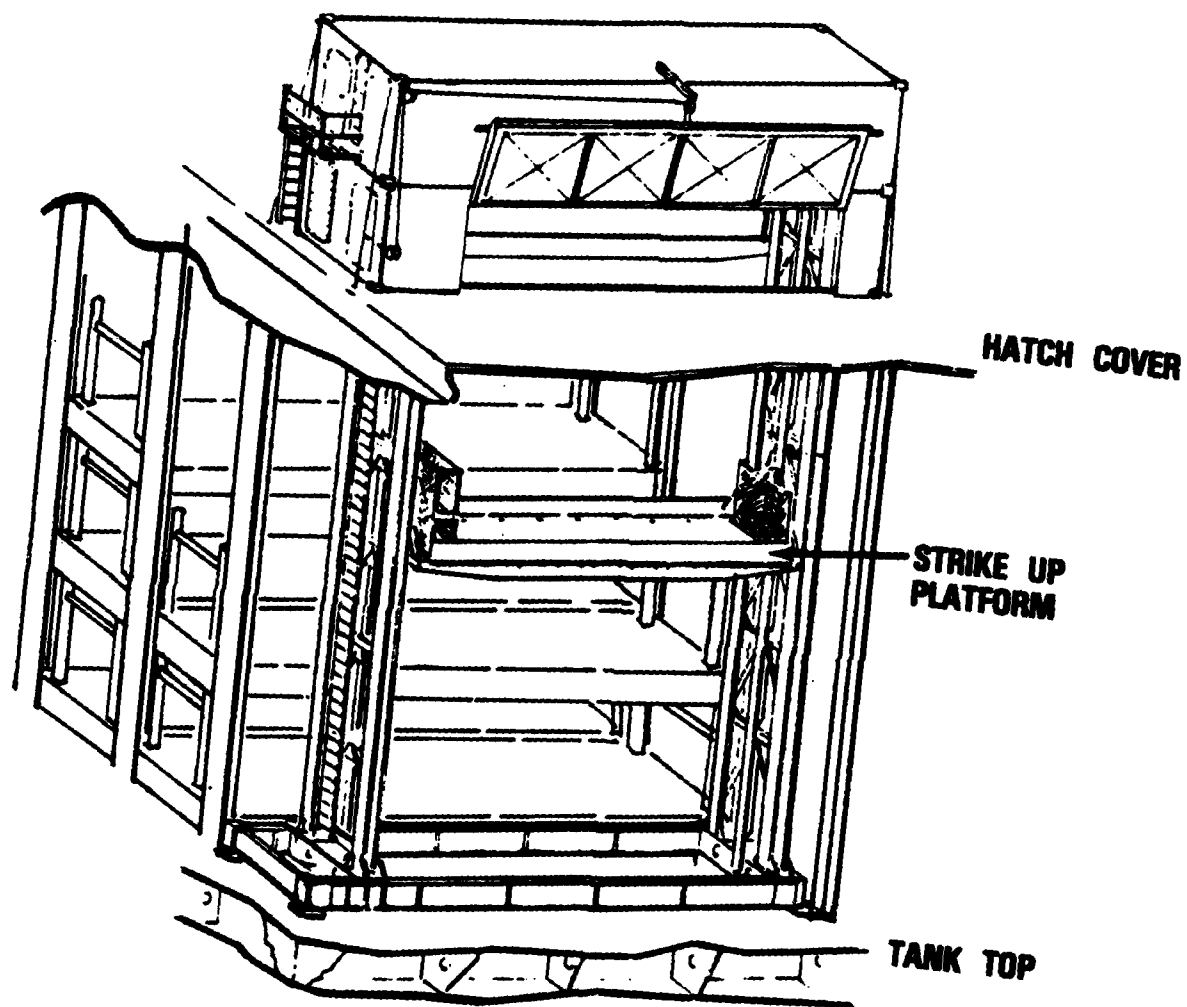
Item Description: The T-ACS is a converted containership of the Ready Reserve Force (RRF) of the National Defense Reserve Fleet modified by the installation of large marine cranes. The ships will also be outfitted with auxiliary features to support the operation of the cranes. Included will be upgraded or supplementary living quarters, additional generator capacity and semi-permanent or permanent ballast, enhanced breakbulk cargo facilities by modification of container holds for future installation of 40-ft SEASHEDs, lighterage stowage, mooring and fendering capabilities.

The primary mission of the ship is to unload other cargo ships brought alongside. The unloading may be done in a port where crane facilities are not available, or in the stream or offshore. The ship will also discharge its own cargo.

The cranes on the T-ACS are evolutionary variations of the level luffing type already in widespread merchant service. The installation on T-ACS 1, 2, and 3 consist of three twin-boom rotating pedestal cranes. Installation on subsequent T-ACS ships will be dependent on ships selected for conversion. The cranes will be able to lift a fully loaded cargo container (30 long tons) from the outboard cells of a ship alongside (one boom), a heavy tank (60 long tons) at 85-ft reach (two booms), and a powered causeway section (86 long tons) at 96-ft. The latter lift will be accomplished by pairing two cranes (total of four booms).

Status: T-ACS 1, SS KEYSTONE STATE, was delivered to the Government in May 1984. The ship successfully completed Joint Logistics-Over-the-Shore (J-LOTS II) exercises in October 1984. The second ship, T-ACS 2, began conversion in September 1984 at Continental Maritime of San Francisco, Inc. Delivery of T-ACS 2 is scheduled for September 1985.

Program Plan: The T-ACS program calls for conversion of a total of 11 ships from the RRF. Conversion of T-ACS 3 is scheduled to begin in May 1985. The last ship is programmed for start of conversion in 1988.



CONTAINERSHIP STRIKE-UP SYSTEM

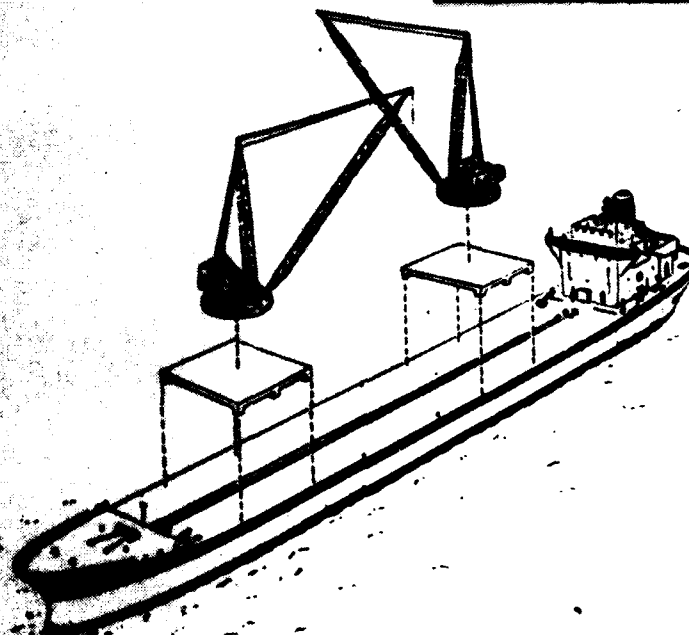
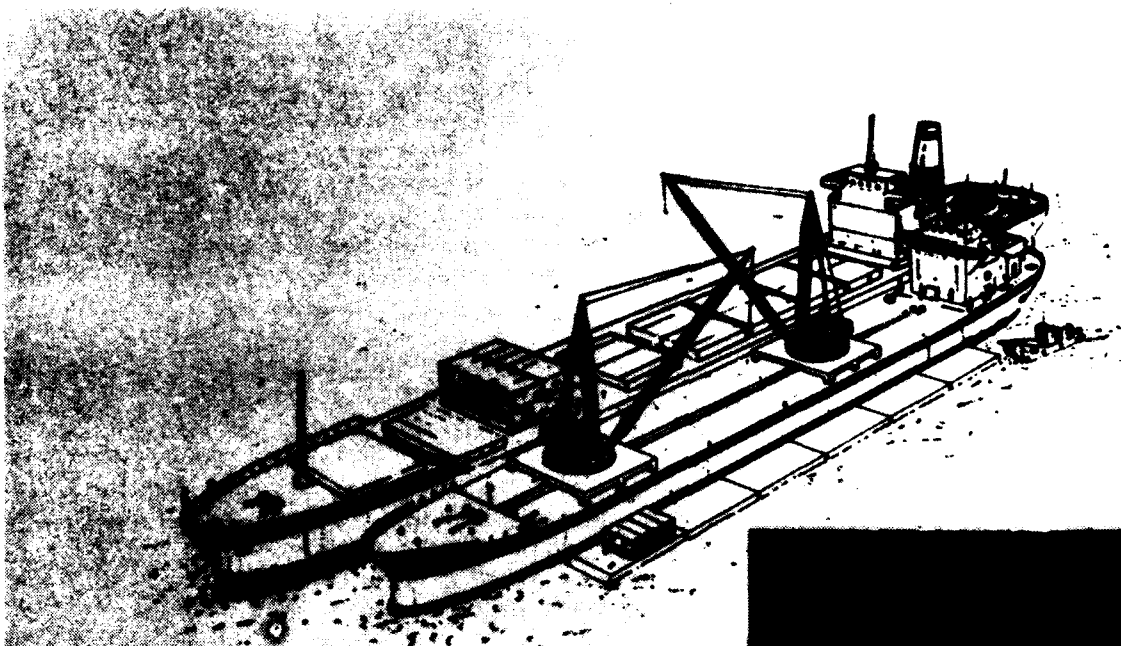
Title: Containership Strikeup System (CSUS)

Point of Contact: Fink, M., Mr., Naval Sea Systems Command (PMS-377K1),
Washington, DC 20362, Autovon 222-8517/Commerical
(202)692-8517

Item Description: The Containership Strikeup System (CSUS) is a modular elevator system designed to fit in one cell of a containership. The system will be composed of modular sections that will allow the system to fit in holds from 3 to 7 containers deep. The system will penetrate the hatch cover on which the access module and machinery module will rest. The weight of that portion of the system below the hatch cover rests on the container hard points. Lift capacity of the system is 20,000 pounds. The CSUS will be used in conjunction with flatracks and SEASHEDs that provide temporary 'tween decks for stowage and athwartships movement of cargo. In this concept, the cargo will be broken out at sea (anchored or underway), struck up by the CSUS, and transferred at sea by a STREAM rig.

Status: Two competitive concept designs have been reviewed from which a government baseline has been prepared.

Program Plan: The program plan is to award a follow-on contract for detail design and prototype construction in 1985. Production systems are programmed for procurement commencing in FY88.



IV-10

Title: Container Offloading and Transfer System (COTS); Temporary Container Discharge Facility (TCDF)

Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA 22332, Autovon 221-8533/ Commercial (703)325-8533

Item Description: The TCDF concept consists of positioning two cranes, with Lifting capability of 40 LT (40.7 MT) at 150-ft (45.7M) on a ship/platform of opportunity for use in unloading an alongside non-self-sustaining containership (and other ships) at the Amphibious Objective Area (AOA). The TCDF is "temporary" in that the cranes are installed just prior to deployment, and would not require "peacetime idle" dedication of ships or economically/operationally excessive peacetime alterations to the ship platform candidates. Crane support beams identical to those for the Crane-on-Deck Hatch Cover Bridging Sets distribute the loads into the structure of the ship.

The US manufactured candidate cranes based on land-rated reach and lift capabilities are:

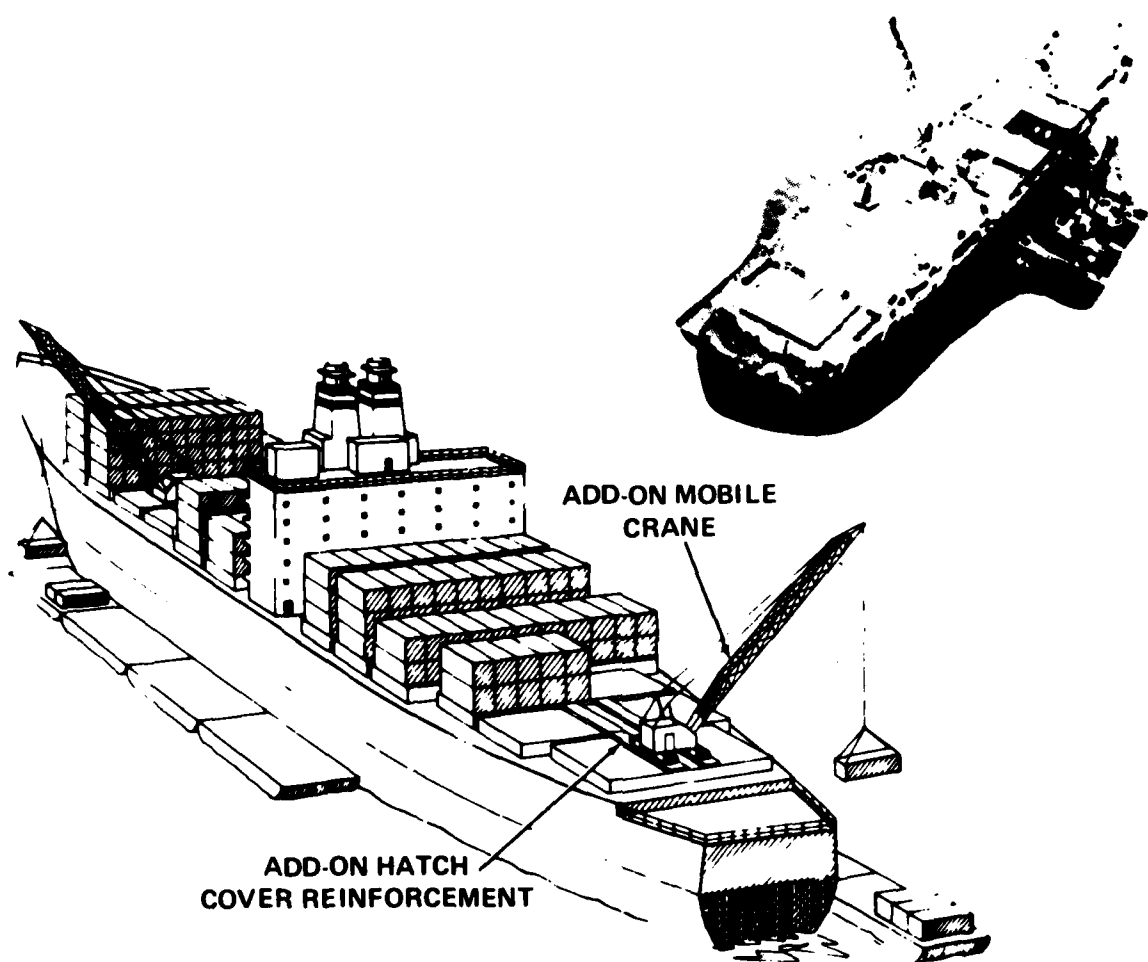
1. Clark/Lima 7700-7707
2. American Hoist and Derrick 11310
3. Harnischfeger/P&H 6250
4. Manitowoc M4000W, M4100W, and M4600W (RINGER)
5. Clyde Iron Works/will build to order
6. FMC

A study in Aug 77 identified 26 commercially operated or MSC tankers that would make suitable TCDF platforms. All of these tankers could be made into TCDFs by the addition of two cranes and crane support, without requiring shipyard availability, within four to six days. It has since been determined that other type hulls, including SEATRAN and LIGHTNING class containerships, would be suitable for the TCDF mission, with varying degrees of capability depending on type.

The operational concept is for a containership to be anchored with the TCDF alongside, separated by fenders. The containers would then be lifted from the containership to lighterage for transit to the shoreline facility. (See Elevated Causeway [ELCAS])

Status: Technical and operational evaluation testing was completed on a ship platform in Dec 80. Recommendations indicated operational effectiveness given a representative platform. The project was suspended in Feb 82 and the development of a containership offloading platform now is under the Naval Sea Systems Command Auxiliary Crane Ship (T-ACS) project. Chief of Naval Operations letter serial 40B/390605 of 5 Feb 82 pertains.

Program Plan: Suspended.



Title: Container Offloading and Transfer System (COTS); Crane-on-Deck (COD)

Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA 22332, Autovon 221-8533/Commercial (703)325-8533

Item Description: The Crane-on-Deck (COD) approach renders non-self-sustaining containerships self-sustaining by placing two or three mobile crawler cranes on deck, each with a relocatable Hatch Cover Bridging (HCB)/COD crane support kit to distribute loads onto the hatch coamings. Each crane requires a set consisting of four made-up steel beams with wood decking 43-ft (13.1M) long, 4-ft 2-1/2-in (1.22M) wide, 3-ft 1-in (0.9M) high, weighing approximately 16 LT (16.4 MT). These beams span the coamings over the closed container cell hatches. The crawler crane sits on two of the lashed down beams using the other two beams to provide tracks for the crawler crane to move forward/aft on the ship, discharging one cell at a time. Crawler cranes are preferred to truck cranes because only bridging under the crawler tracks (four pieces in two rows) is required, while the wheel crane would require additional sets of bridging for the outriggers (eight pieces in two rows). The cranes and kits would be placed on the ship during load-out in one to two days without requiring a shipyard availability. Four commercial crawler cranes (American 9299, 9310 and Manitowoc 4000W, 4100W) having a capability to handle 40-ft (12.2M) ISO containers weighing up to 30 LT (30.5 MT), along with associated handling gear (totaling approximately 40 LT (36.3 MT) at 50-ft (15.2M) have been identified as the preferred type/size to conduct offloading operations. The 93 US Flag container ship fleet has been divided into three categories of suitability/adaptability to the COD concept: 29 ships in eight class designs are preferred, 41 ships in eight class designs are acceptable, and 23 ships in eight class designs are undesirable. Criteria are based primarily on deck obstructions that would have to be removed.

Status: The technical data package to render the COD concept operational is on hand. Development beyond Joint Logistics-Over-the-Shore (JLOTS) tests in Aug 77 was suspended in preference to the Temporary Container Discharge Facility (TCDF) because of the superior economy of the TCDF and its additional benefit as a heavy lift transporter. The TCDF concept subsequently was suspended and the development of a container ship offloading platform now is under the Naval Sea Systems Command Auxiliary Crane Ship (T-ACS) project. Chief of Naval Operations letter serial 40B/390605 of 5 Feb 82 pertains.

Program Plan: To be determined.



IV-12

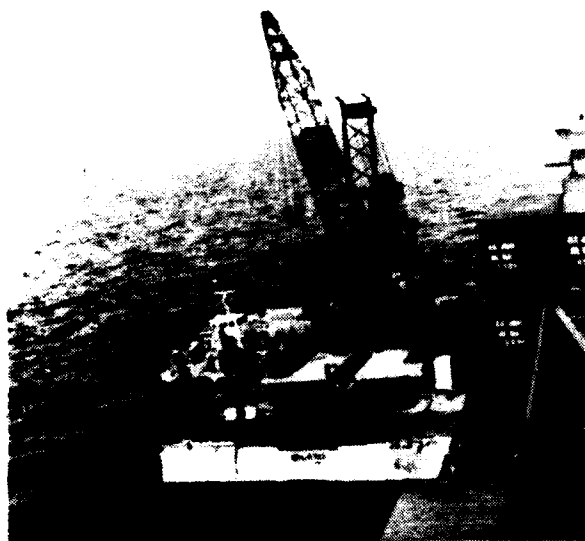
Title: Container Offloading and Transfer System (COTS) COD & TCDF COTS Crane Support

Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA, Autovon 221-8533/Commercial (703)325-8533

Item Description: The COD and TCDF crane support was designed to carry the intended load of container handling without any major modifications to the ships. This support foundation is external to the ship and requires only tie down points appropriately located on the ship to hold the crane and foundation during both transit to and operations at the Amphibious Objective Area (AOA). This crane support has been designed for quick installation (one to three days) without requiring shipyard availability. The crane support is a composite weldment composed of three 36-in (91.4 CM), 230 lb (104 kg) wide flange beams welded together with stiffener plates added as necessary. The top surface of the beams is covered with 2-in (5 CM) wood decking. The design selected is simple, low cost, adaptable for truck crane use, and suitable to a broad range of container ships (identified under COD) including those carrying 35-ft containers. Each beam is 43-ft (13.1 M) long, 4-ft 2-1/2-in (1.3 M) wide, 3-ft 1-in (0.9 M) high, and weighs approximately 36,000 lb (16,329 kg). The beams are designed to span the hatch covers. Four beams (two pairs) are required in the COD mode using a crawler crane. Eight would be required when using a truck crane because of the truck crane's outriggers (which are required to achieve stability). Each crawler crane sits on two of the beams using the other two beams to provide a track for moving forward/aft while unloading the entire ship. In the TCDF mode, four beams are also used. Since the crane is not required to move on the ship, the four beams are arranged into a square of suitable dimension, and chocked to form to the camber of the ship deck. Again, tie downs are required to secure the crane and foundation to the ship for transit to and operations at the AOA. This arrangement is suitable for a number of ships identified under TCDF development.

Status: The crane support was tested in the COD configuration as part of Joint Logistics-Over-the-Shore (J-LOTS) test in Aug 77. Testing of the TCDF configuration was completed in Dec 80 (Refer to COD and TCDF).

Program Plan: COD to be determined/TCDF suspended.



IV-13

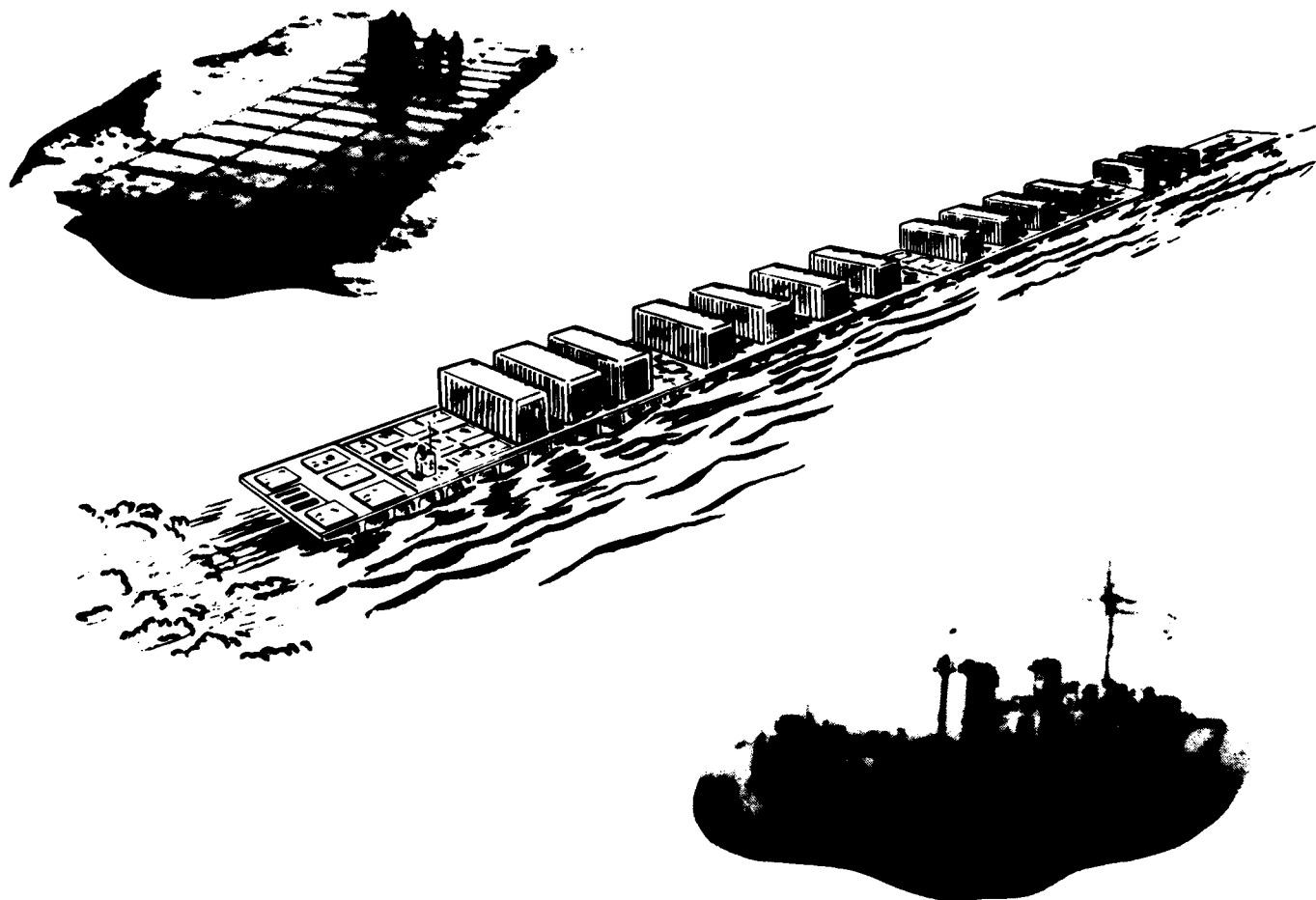
Title: Container Offloading and Transfer System (COTS) Crane on "B"
DeLong Barge

Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command
(FAC-032B), Alexandria, VA 22332, Autovon 221-8533/
Commercial (703)325-8533

Item Description: A mobile crane (P&H 6250-300-ton lifting capacity capable of handling 62,800 lb [31.2 Mg] at 80-ft [24.4 M] in sea state 0-1) was installed as a fixed revolving crane on a floating "B" DeLong barge to be used for the discharge of containers from the holds of a non-self-sustaining containership. The crane was supported on DeLong bridging beams and used special load spreading outrigger pads. The primary constraint is that the barge can be towed at no more than five knots, and is structurally inadequate for safe ocean tow with mobile cranes on board. However, the use of a SEABEE ship would transport and discharge this facility by utilizing the 2,000 LT (1 Mg) capacity elevator at the stern. The elevator submerges so that barge cargo can be floated over it for hoisting.

Status: Transportability on SEABEE vessels was addressed in J.J. Henry's 6 Jan 76 report (Contract#N00600-75-D-0814) and tested in Joint Logistics-Over-the-Shore (J-LOTS) in Aug 77 as documented in ORI Report #1267 dated 7 Dec 77. Moving the "B" DeLong off the elevator requires minor modification to SEABEE ships. Launching in other than a dead calm seaway has not been tested.

Program Plan: The COTS program will not pursue further development on SEABEE transportability because of the J-LOTS demonstrated sea state limitations of the concept (refer to TCDF status).



IV-14

Title: Container Offloading and Transfer System (COTS); Causeway
Section Powered/Side-Loadable Warping Tug (CSP/SLWT)

Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command
(FAC-032B), Alexandria, VA 22332, Autovon 221-8533/
Commercial (703)325-8533

Karrh, B., Mr., Naval Civil Engineering Laboratory
(NCEL-L55), Port Hueneme, CA 93043, Autovon 360-4638/
Commercial (805)982-4638

Item Description: The Causeway Section Powered (CSP) has the configuration and nominal dimensions of a standard 3 x 15 causeway section, 21 x 90-ft (6.4 x 27.4M). The non-powered subsection, and the waterjet propulsion plant subsections are assembled into one integral CSP unit. The CSP, weighing 80 LT (81 MT), can be side-carried on LST ships and launched similar to standard pontoon sections. When attached to 3 to 4 other standard 3 x 15 causeway sections, the unit becomes a Self-Powered Causeway (SPC). Additionally, the SPC is LASH and SEABEE transportable. The non-powered subsection is a 3 x 11 (21 x 55-ft - 6.4 x 16.8M) NL pontoon assembly with 3 P5F and equivalent to a 3 x 4 NL pontoon assembly (21 x 24-ft - 6.4 x 7.3M) and is composed of three separate modules, each with dimensions equivalent to a 1 x 4 NL pontoon assembly (7 x 24-ft - 2.1 x 7.3M). Two of these are propulsion modules, port and starboard. Each houses a diesel engine, marine gear, propulsion pump, and a rotatable waterjet nozzle, hydraulic system, electric system, and fire extinguisher system. A non-retractable control station is located on the forward deck of the starboard propulsion module. The center module contains the fuel tank, batteries, accumulators for the engine starting system, and an anchor housing for 2,500 lb (1,134 kg) LWT anchor. Static thrust of the two engines together at 2,100 rpm is: forward - 12,000 lb; side - 10,000 lb; and aft - 8,000 lb. Speed of the CSP is ten knots. Routine maintenance and minor repairs can be performed without drydocking the propulsion module by removing deck hatches over the engine and/or over the pump. Steering in any direction and reversing is accomplished by rotating the waterjet nozzles. The CSP is converted into a Side Loadable Warping Tug (SLWT) with the addition of an A-frame and winch.

Status: Approval for full production granted Sept 1984.

Program Plan: One Hundred and twenty units for the Assault Follow-on Echelon will be procured in FY85-90. The SLWT is being type classified for Army use by the Belvoir R&D Center as support items to the Roll-On/Roll-Off Discharge Platform and Floating Causeway. Army IOC is expected in late FY86.



IV-15

Title: Container Offloading and Transfer System (COTS); Elevated Causeway (ELCAS)

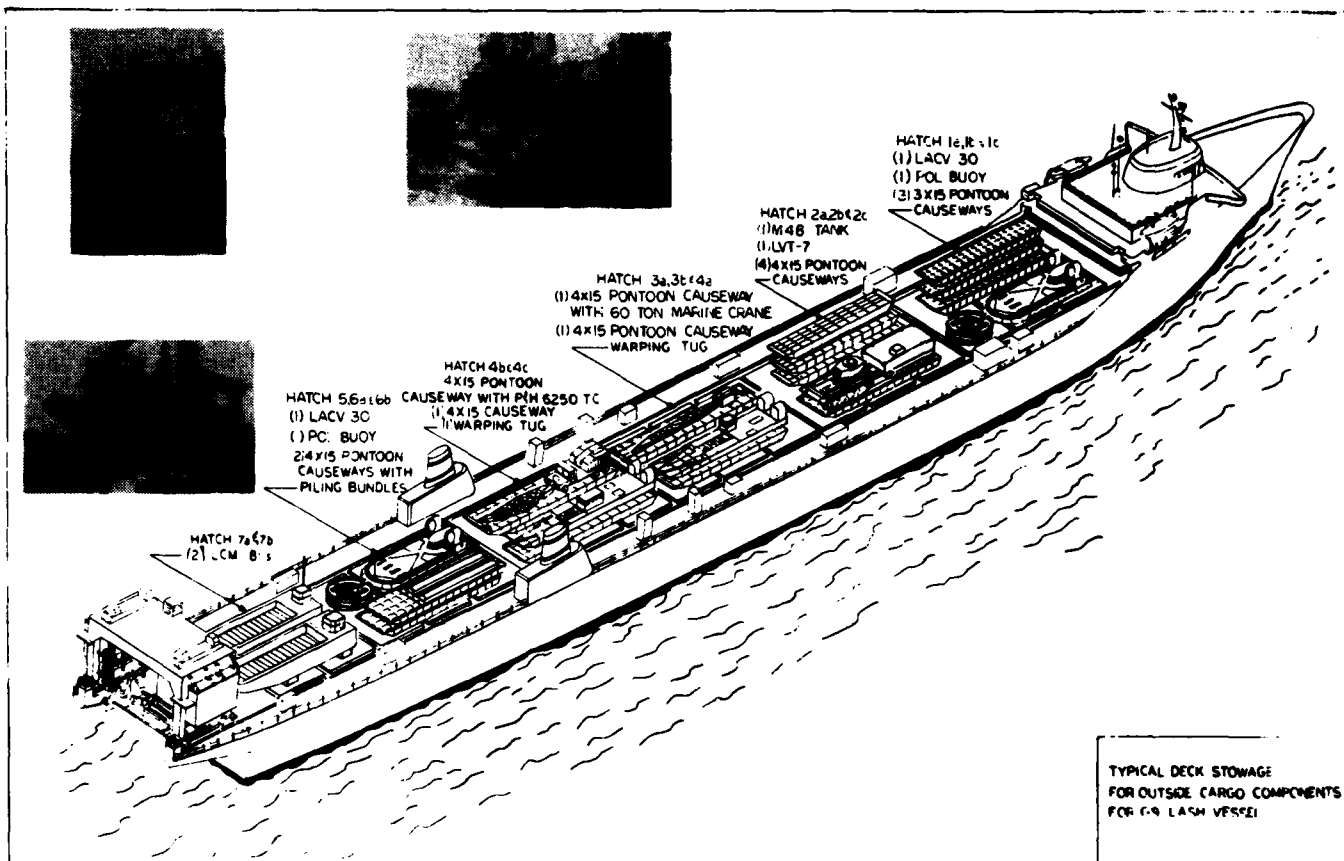
Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA 22332, Autovon 221-8533/Commercial (703)325-8533

Hromadick, J., Mr., Naval Civil Engineering Laboratory (NCEL-L55), Port Hueneme, CA 93043, Autovon 360-5719/Commercial (805)982-5719

Item Description: The Elevated Causeway facility provides for an interface between lighterage and shore by bridging the surf zone. It is based on the use of 3 x 15 pontoon sections 21-ft (6.4M) wide by 90-ft (27.4M) long. Basically, the facility consists of a lift system and lift components integral with the basic structure. The lift system is made up of hydraulic chain jacks, gimbals, stud link chain, a hydraulic power unit, and miscellaneous hardware. The lift components consist of internal and external spudwells. Other major elements of ELCAS consist of a 50 ton (45.5Mg) mobile crane for erecting and 150 ton (136.1Mg) mobile crane for container operations, and a 48-ft (14.6M) air bearing vehicle turntable including air compressor.

Status: Approval for Service Use (ASU) was achieved in Nov 80. Development to enhance throughput capability with improvements to trafficability and load capacity continue.

Program Plan: Procurement of five units for the Assault Follow-on Echelon FY78-89. PTan is underway to procure in FY86 an alternate ELCAS. This alternate ELCAS will be made up from ISO size modules replacing the NL Pontoons. All other subsystems will remain the same. Also, the ISO modular unit will be compatible with existing NL Pontoon System. The ELCAS will be type classified for Army use and two units procured in FY87-88.



Title: Container Offloading and Transfer System (COTS) Cantilever Lift Beam

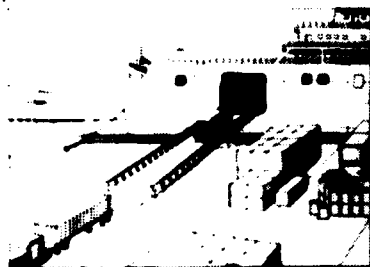
Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA 22332, Autovon 221-8533/Commercial (703)325-8533

Item Description: Capability to deploy aboard commercial LASH vessels heavy, outsized equipment and off-load offshore. A special lifting device attaches to the LASH ship's gantry crane (designed to lift 30-ft x 60-ft barges up to 500 ST) and enables the lift of non-barge, eccentric loads up to 200 tons approximately 60-ft wide x 90-ft long. The beam was designed to be mated to the four lifting sockets of either the Morgan or Alliance lighter crane lifting frames. The design concept called the Cantilever Lift Beam has been accepted as a National Defense feature by MARAD. Certification by the American Bureau of Shipping will be based on the capacity of the eccentrically loaded crane.

Status: A cantilever lift beam has been provided for each of the new LASH ships built by Avondale Shipyards for Waterman with deliveries starting in 1981. Two cantilever lift beams were procured and tested in FY84.

Program Plan: Procure 12 units, from FY85-90, to provide one for each of the 14 existing LASH ships.

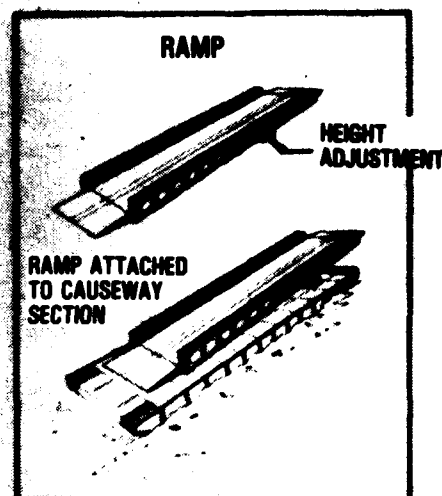
SHIP OFFLOADING SUBSYSTEM ROLL-ON/ROLL-OFF (RO/RO) LOW SEASTATE (0-1) RAMP



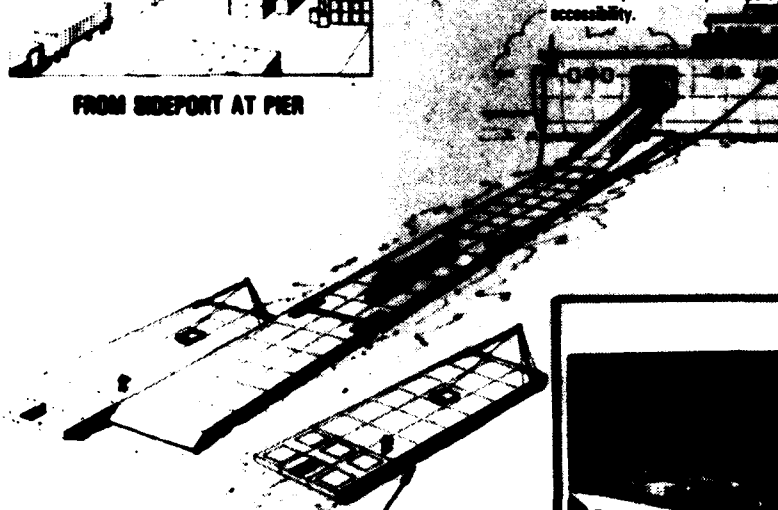
FROM SIDEPORT AT PIER

OFFSHORE OPERATIONS

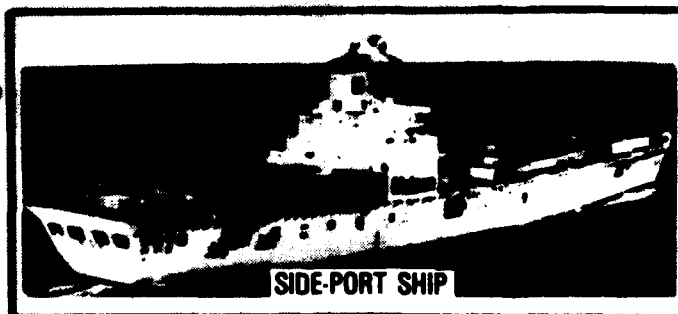
Ramp and causeway sections are positioned, and loaded, then causeways are transported to shore by Side Loadable Warping Tugs (SLWT). Sideport or sternport of a RO/RO ship can be used; however, 80 percent of U.S. flag RO/RO ships have only sideport accessibility.



RAMP ATTACHED TO CAUSEWAY SECTION



**SIDE LOADABLE
WARPING TUG**



SIDE-PORT SHIP

Title: Container Offloading and Transfer System (COTS) Roll On/Roll Off (RO/RO)

Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA 22332, Autovon 221-8533/Commercial (703)325-8533

Vaughters, T., Mr., Naval Ship Research and Development Center (NSRDC-1190), Annapolis, MD 21402, Autovon 281-2261/Commercial (301)267-2261

Item Description: Pontoon causeway assets, transportable and affordable, can be used along with portable ramps (as necessary) to provide a facility to offload commercial RO/RO stern and sideport ships in the absence of deep-draft berthing facilities. In calm or sheltered water the RO/RO Facility utilizes causeway sections to be floated to the ship to provide an interface with the ship's ramps or, if the ship does not have ramps, a portable ramp will be provided. The ramp is then attached to the ship side/stern port so the vehicles can drive off onto the causeway sections.

Status: The RO/RO offloading facility was approved for full production in Oct 1984.

Program Plan: Nine facilities will be procured for the Assault Follow-on Echelon FY85 through FY87. Each facility consists of one Calm Water Ramp (CWR), one Causeway Platform Facility (CPF), tended by one Side-Loadable Warping Tug (SLWT) and one Causeway Section, Powered (CSP). The RO/RO is being type classified for Army use by the Belvoir R&D Center and four units will be procured in FY85-86. Army IOC is expected in late FY86.



IV-18

Title: Container Offloading and Transfer System (COTS): Helicopter Offloading

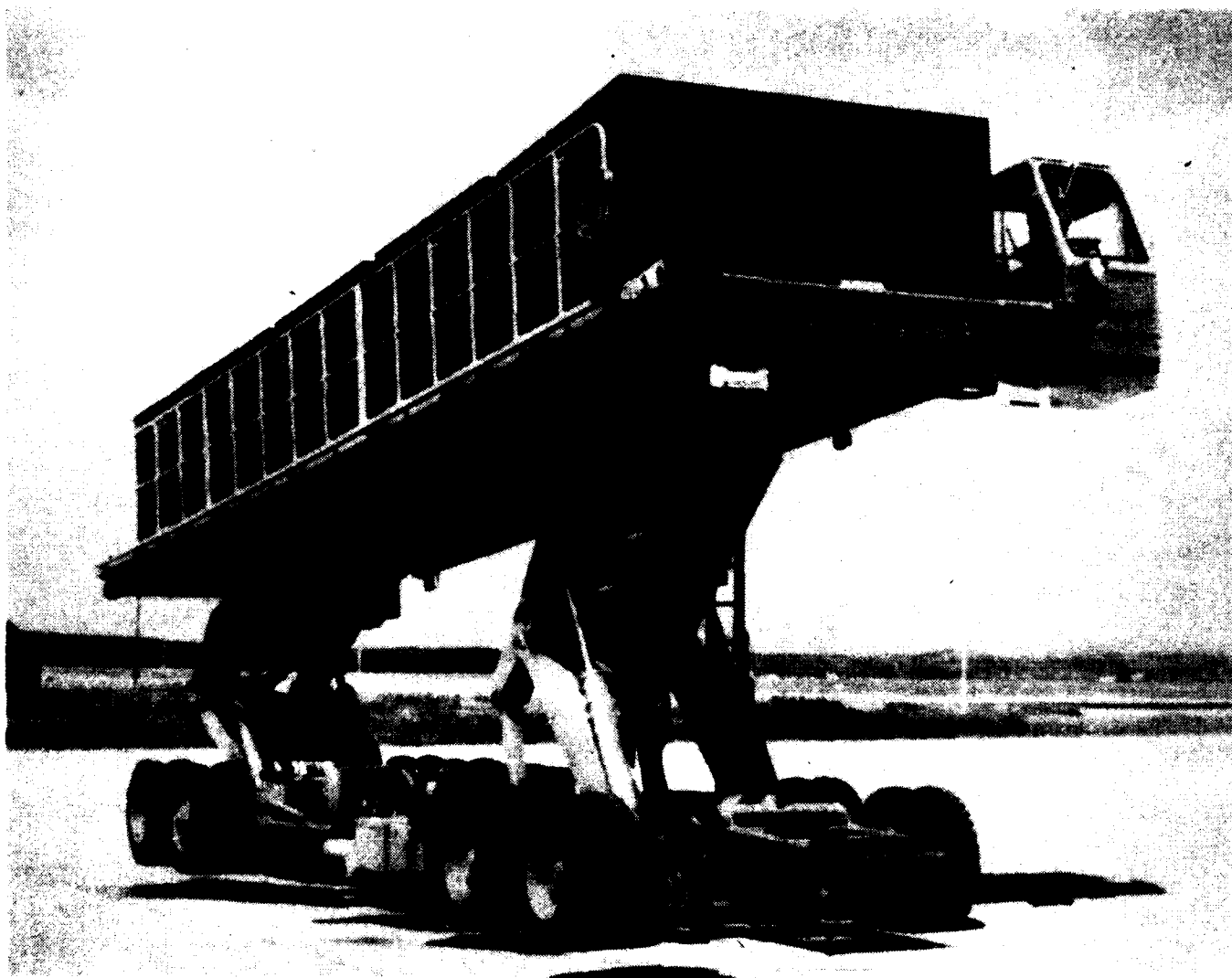
Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA 22332, Autovon 221-8533/Commercial (703)325-8533

Item Description: To provide for the discharge of containers via helicopter from non-self-sustaining containerships, the identification of existing hardware and procedures and/or development of new hardware and procedures (if needed) is required. Due to the 16 ton lift capacity limitation of the CH-53E, the hazards of ship's superstructure, weight and size of hatchcovers, and relative motion, it would be necessary to employ a Crane on Deck (COD) on non-self-sustaining containerships. The crane would handle hatchcovers and position containers for ready acquisition by helicopters. Additionally, container maximum gross loads cannot exceed 16 tons. The end product is intended to be a consolidated "package" of the required equipment and procedures.

Status: The Aviation Research and Development Command (AVRADCOM) provided funds to the Applied Technology Laboratory (DAVOL-EU-ASR) at Fort Eustis, VA to enable the fabrication of two Container Lift Adapter Helicopter (CLAH) prototype devices to be tested in coordination with the CH-53 Follow On Test and Evaluation (FOT&E) and other COTS activities, in containership offloading tasks.

Program Plan: Participate in joint testing with CH-53E. Provide operational manual containing accumulated know-how from OSDOC I & II, describing equipment and helicopter containership offloading procedures. No procurement to be initiated by COTS. All interface equipment is expected to be procured by commands having cognizance over helicopter support functions.

**AERIAL PORT/
TERMINAL
EQUIPMENT**



V-1

Title: 40K 463L Aircraft Loader

Point of Contact: Lewis, R., LTC, or McAllister, J., Mr., HQ USAF/LETN,
Washington DC 20330, Autovon 227-3371/Commercial
(202) 697-3371

Item Description: This aircraft loader has the capacity to transport 40,000 lb palletized loads to and from cargo aircraft. It has a platform length of 41-1/2-ft, a width of 10-ft, and a lifting range of 3-1/3-ft to 13-ft at 10 FPM. The unit will accommodate five 463L pallets. The loaders are air transportable and are available at all major aerial ports. The 40K loader can also accommodate an ISO container loaded on married 463L pallets or other adapter systems. The unit cost is \$226,444.

Status: The Air Force has 287 40K loaders on hand. Beginning in FY86 the 40K Loader will be replaced by the Large Capacity Loader. This air transportable aircraft loader will also be a member of the 463L Material Handling System. It will have a conveyORIZED cargo platform which will be adjustable from 40- to 156-inches.

Program Plan: The inventory objective for the Large Capacity Loader is 300 with 210 programmed from FY86 through FY90.



V-2

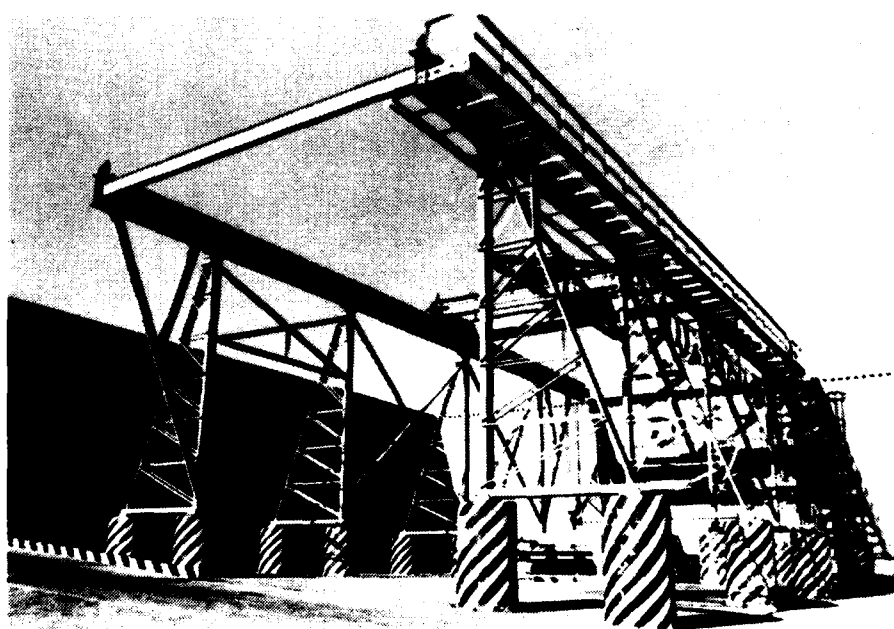
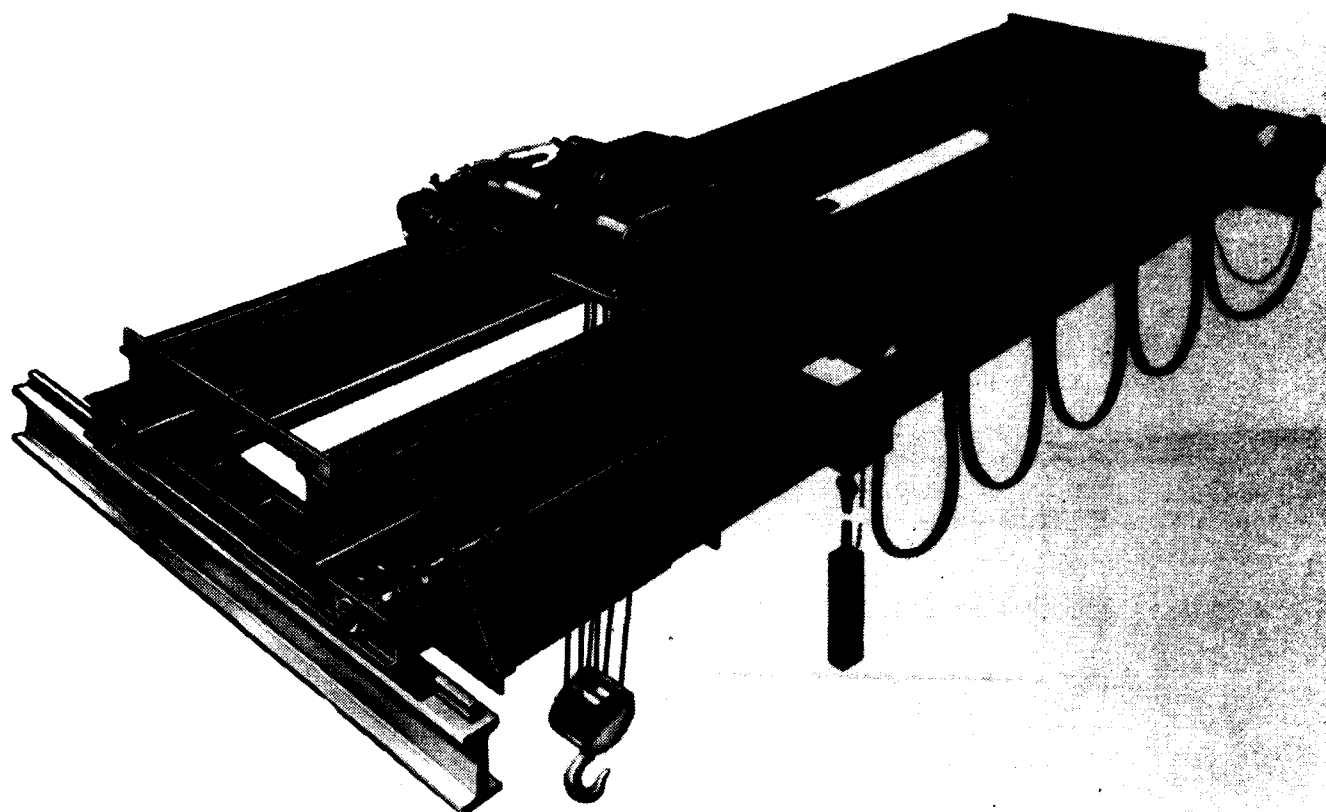
Title: 25K 463L Aircraft Loader

Point of Contact: Lewis, R., LTC, or McAllister, J., Mr., HQ USAF/LETN,
Washington, DC 20330, Autovon 227-3371
Commercial (202)697-3371

Item Description: This diesel powered aircraft loader has the capacity to transport 25,000 lb palletized loads to and from cargo aircraft. It has a platform length of 24-ft, a width of 10-ft, and can accommodate three 463L pallets. The 25K loader is air transportable by C-130 and available at major aerial ports. The 25K loader can accommodate ISO containers with gross weight, including 463L adapter systems, of 25,000 lbs. The unit cost is \$142,210.

Status: The Air Force has 313 units on hand.

Program Plan: The inventory objective is 624 units. A remanufacture program is rebuilding all 313 existing 25K loaders to preclude buying replacements for that quantity. There are 150 units currently being procured with 161 more units being programmed for procurement through FY89 to achieve the inventory objective.



V-3

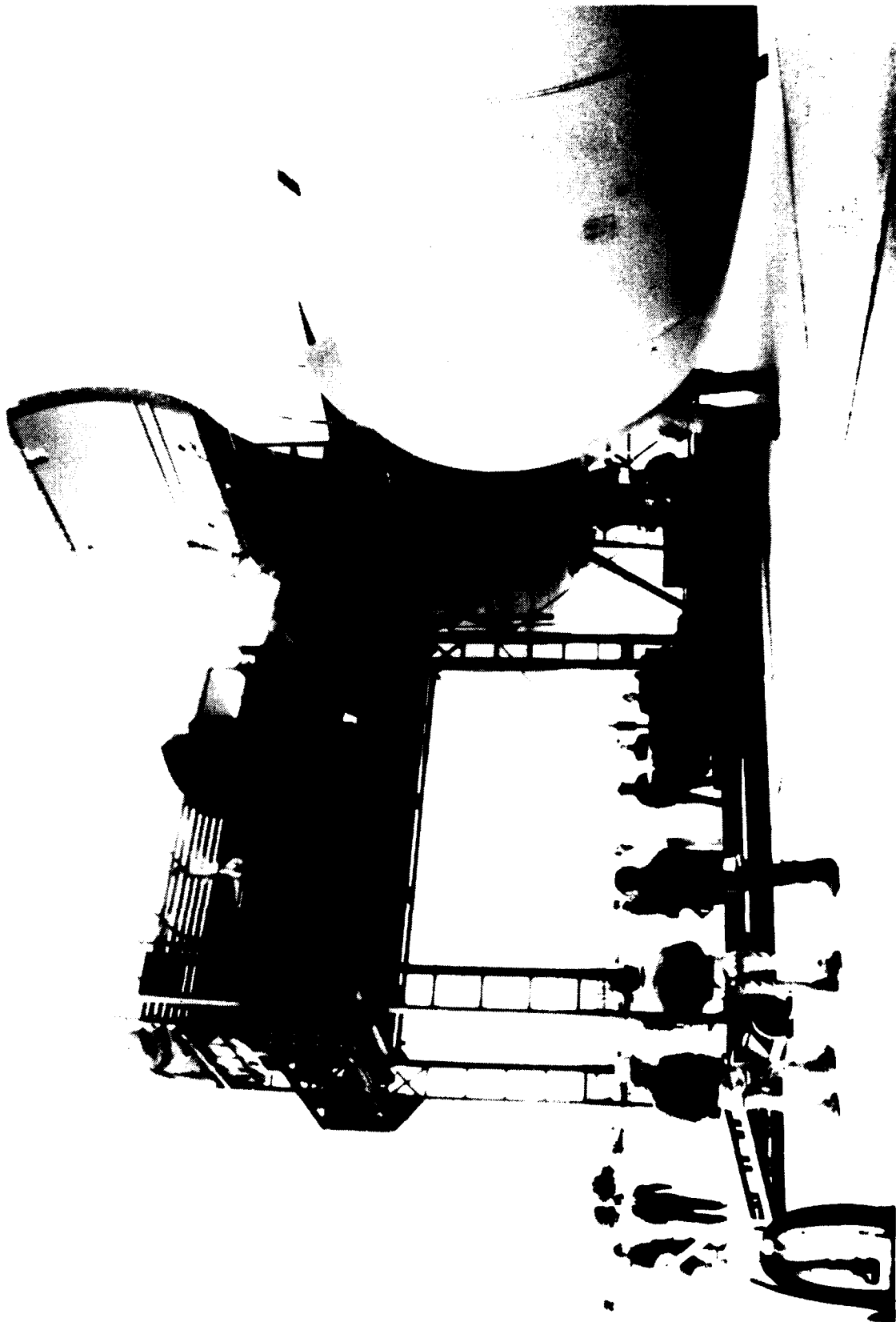
Title: 35-Ton Bridge Crane

Point of Contact: Ganger, M., LTC, HQ Military Airlift Command/TRXF,
Scott AFB, IL 62225, Autovon 638-5977/Commercial
(618)256-5977

Item Description: This item provides major aerial ports the capability to build up pallets for air drop missions and transfer fully loaded ISO shelters, air/land or surface containers from trucks/trailers to adapter systems and aircraft loaders. The bridge crane is not mobile and provides the capability to support limited container movements.

Status: Bridge cranes are installed at the following aerial ports: Dover, Travis, Mildenhall, Ramstein, Rhein-Main, Clark, and Kadena.

Program Plan: None.



V-4

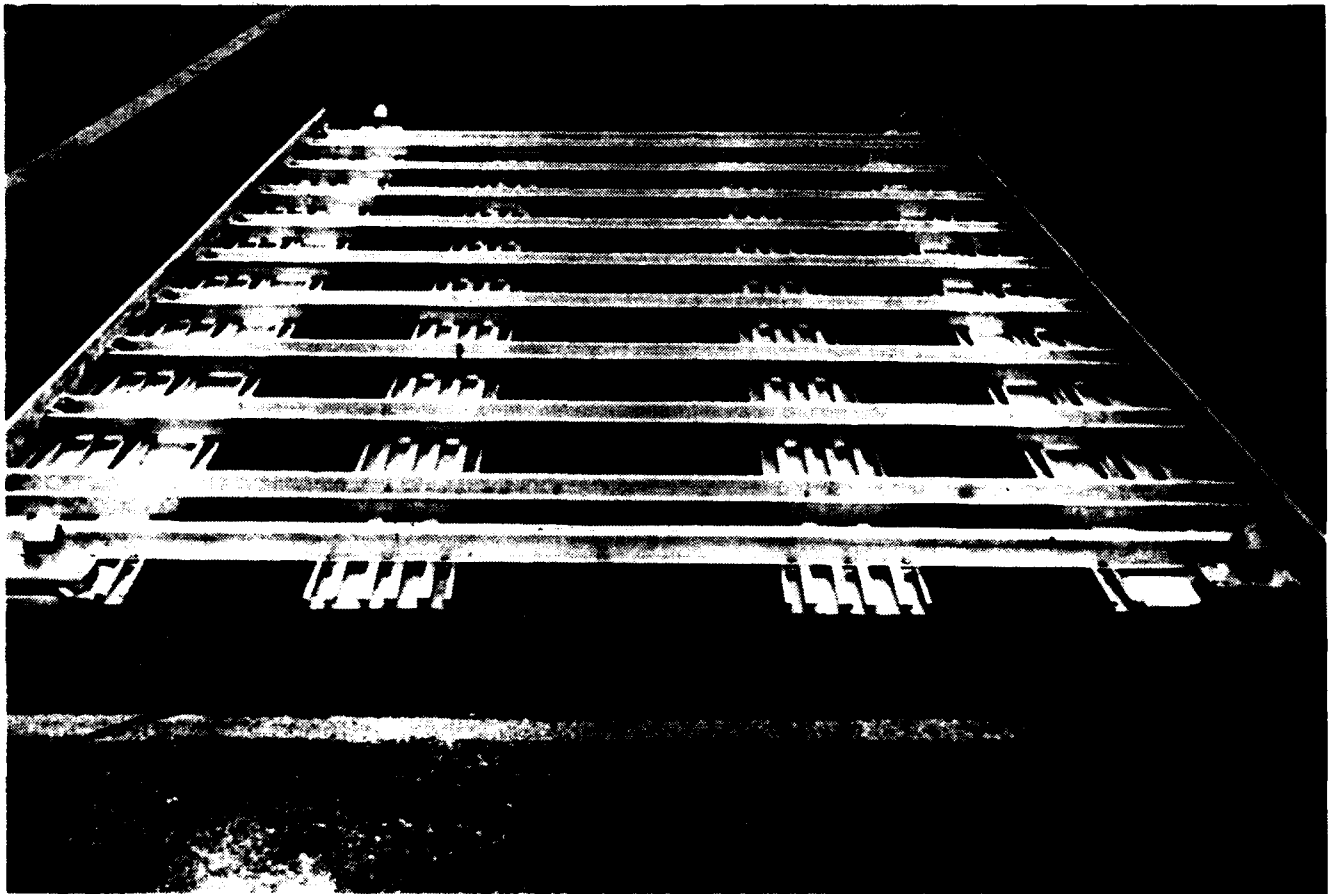
Title: Elevator Loaders

Point of Contact: Lewis, R., LTC, or McAllister, J., Mr. HQ USAF/LETN
Washington DC 20330, Autovon 227-3371/Commercial
(202)697-3371

Item Description: This item is air transportable on a C-130 aircraft. There are two models of elevator loaders currently in the Air Force inventory. The Model 316A has a two pallet, 25,000 lb capability. The Model 316E has a three pallet, or one air/land container, 40,000 lb capability. The elevator loader can also be used to load/unload rolling stock up to its capacity. It is compatible with wide-body aircraft upper deck nose doors and side doors, with maximum transfer height of 18-ft 6-in. It is used at major aerial ports for efficient mechanized loading/offloading of cargo between wide-body aircraft and other materials handling equipment.

Status: The Air Force has 42 elevator loaders on hand.

Program Plan: The inventory objective is 101 elevator loaders and 16 lower Lobe Loaders. The 59 elevator loaders and 16 lower lobe loaders are on contract to meet the inventory objective. Delivery is expected to begin 2QFY84.



V-5

Title: 463L/ISO Adapter System

Point of Contact: Lewis, R., LTC or McAllister, J., Mr., HQ USAF/LETN,
Washington, DC 20330, Autovon 227-3371/Commercial
(202)697-3371

Item Description: The adapter tactical shelters system provides a means for handling ISO air/surface containers, and, to a limited extent, surface containers in the 463L aircraft material handling system. The system adapts the ISO 96-in width to the 463L 108-in width and provides an interface with the aircraft roller system.

Status: The Air Force has tested and evaluated several adapter systems to date:

a. Two prototype open grid adapter pallets were procured and successfully tested under the MODCOM Program in 1974. A buy program for this pallet was deferred in favor of a flat platform.

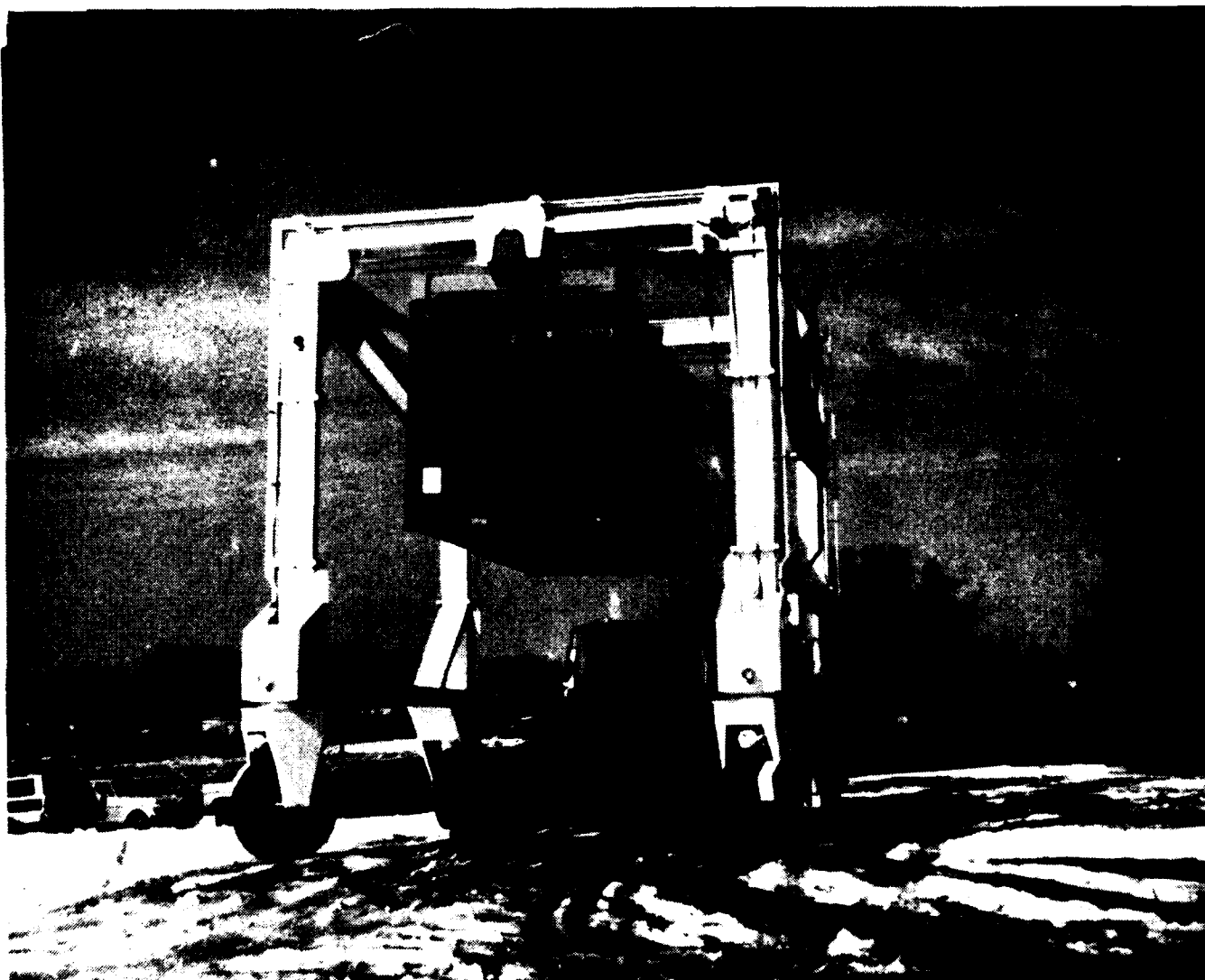
b. Brooks and Perkins, Inc. designed a system using A/E 29H1 airdrop platforms (single managed by US Army) using Brooks and Perkins side rails and end plates with installed ISO corner fittings. AFSC/ESD evaluated this alternative and determined through stress tests conducted by US Army Natick Labs, Natick, MA, that airdrop platforms do not provide adequate features to accommodate movement of containers. Therefore, this initiative was terminated.

c. The Military Airlift Command has submitted a Statement of Operational Need (SON) for an adapter system which was approved by the Air Force in Feb 83.

d. Two companies developed a solid platform adapter pallet capable of handling air/land, SEAVAN, and tactical shelters. These designs are under review.

e. The Air Force Electronic Systems Division, Hanscom Field, MA, has designed a system using two detachable rails to satisfy the requirement. Design and analysis is complete.

Program Plan: The current plan is to procure extrusion dies and two systems for testing during FY85. The total Air Force requirement for adapter systems will be 400 for peacetime and 2,500 for war reserve. Funding for test and evaluation is available in FY85 and programmed in FY86. Production money is programmed for FY86-89.



50,000 LB MOBILE STRADDLE CARRIER

V-6

Title: 50K Mobile Straddle Carrier

Point of Contact: Ganger, M., LTC, HQ Military Airlift Command/TRXF,
Scott AFB, IL 62225, Autovon 638-5977/Commercial
(618)256-5977.

Item Description: This item is being considered primarily for use by major aerial ports to handle the movement of ISO carrier/shelters by air. The mobile straddle crane should have the capability of lifting ISO tactical shelters, surface containers, and air/surface containers weighing up to 50,000 lbs. The unit should also be able to operate within the confines of an aerial port and provide the capability to transfer shelters and containers from/to trailers, aerial port high-line docks, and 25K or 40K loaders. Two types will be required. One type is readily air transportable in a C-130 and another type for strategic aerial ports.

Status: The Air Force does not have mobile straddle cranes currently assigned. One version of the mobile straddle crane has successfully completed a test to assess its military utility as a container handling system, to determine its deployability by air, and to assess its suitability for use in military airlift operations. The test was conducted at Pope AFB, NC by the USAF Airlift Center.

It was also tested in Korea during a test shipment of Air Force containerized munitions. The mobile straddle crane was tested at the discharge pier and during the train offloading at the ammunition storage site. The test successfully demonstrated the deployability of the crane and identified constraints while working in an area not specifically designed for container operations.

The Military Airlift Command Statement of Operational Need (SON) for a mobile straddle crane was approved by the Air Force.

Program Plan: The total Air Force requirement will be for 34 strategic loaders and 16 air transportable loaders. Funding is programmed for FY85-86 to satisfy this requirement. The Air Force FY85 buy will be for 9 strategic loaders and 4 air transportable loaders.



CRANE, ROUGH TERRAIN, STD. FULL REEDED
WHL MTR. 35 TON CAPACITY
NSN 3410-01-070-2703
PETTIBONE CORP., NEW YORK DIVISION
F09603-70-C-1000

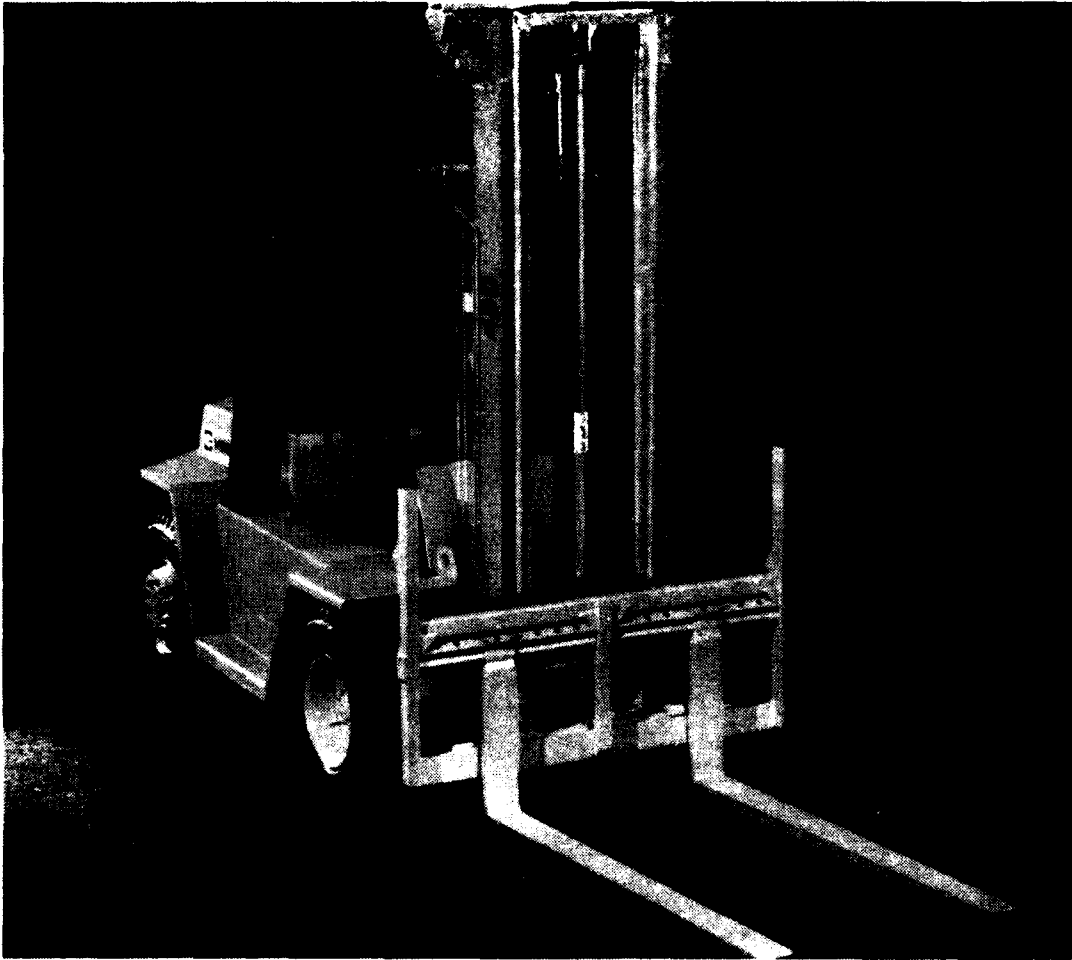
Title: 35T Cranes With Spreader Bars

Point of Contact: Magruder, D., LTC, HQ PACAF/LGTT, Hickam AFB, HI
96853-5001, Autovon 449-9986/Commercial (808)449-6380.

Item Description: This unit is being considered to support CADS container operations in the Pacific area. The multiple mission capability inherent in the crane is appealing. For instance, when containers are not being moved, the crane can be put to other uses.

Status: PACAF has converted its seven 50T "Big Bertha" crash recovery authorizations to 35T cranes. Spreader bars will be ordered against each 35T crane authorization. These 35T cranes w/spreader bars will provide the command the capability to handle limited CADS shipments which require downloading from the chassis or rail cars. However, as demonstrated in CADS I and CADS II tests in 1981 and 1982, the PACAF plan is to offload munitions directly from the container/MILVAN mounted on the chassis at the storage sites, rather than downloading the containers.

Program Plan: The first 35T crane allocations are due in April 85.



V-8

Title: 22/33K Capacity Forklift

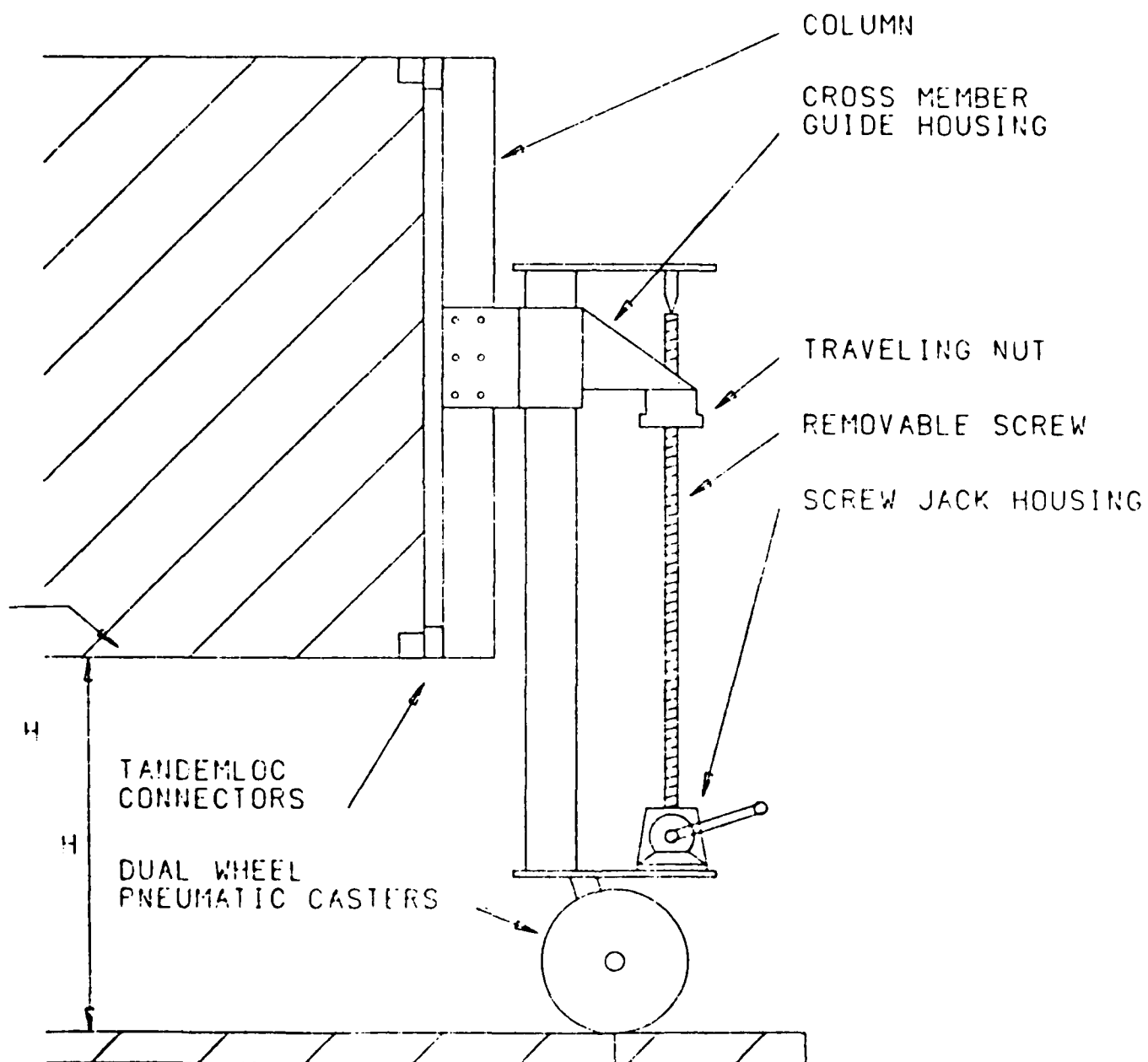
Point of Contact: Weismantel, K., CMSGT, HQ TAC/LGTT, Langley AFB, VA
23665-5001, Autovon 432-3807/Commercial (804)764-3807

Item Description: This 33,000 lb rated forklift with a 22,000 lb minimum capacity at a 48-inch load center will be used to handle tactical shelters at TAC and PACAF bases. Some Air Force shelters have a maximum gross weight of 20,000 lbs. The forklift will be a commercially available vehicle. Rough terrain capability is not required, side shift carriage is mandatory, air transportability on C-141 aircraft is desired.

Status: Both TAC and PACAF will replace, through attrition, existing 15K forklifts with the 22/33K forklift.

Program Plan: Specifications and invitation for bids should be available in April 85. TAC expects to buy five units in 1985, six units in FY85 and eight more on a single multi-year contract in FY86 and later. The PACAF plan is being developed.

WEIGHT: EACH COMPONENT MUST BE
UNDER 100 LBS.



Title: "SUPER JACK" Mobile Loading System

Point of Contact: Harris, F., Capt., Shelter Management Office, ESD/OCMS,
Hanscom AFB, MA 01731, Autovon 478-5457/
Commercial (617)861-5457

Item Description: The "SUPER JACK" Mobile Loading System will load an ISO shelter onto military aircraft and flatbed trailers and provide limited mobility (less than 10-mph on paved surfaces). Aircraft loading can be done either roll-on/roll-off or level loading. The weight limit is 20,000 lbs.

Status: Fabrication of components is currently in process with expected delivery in Jan 85.

Program Plan: Static testing is scheduled for Jan 85 and operational testing is scheduled Feb 85. Award of a production contract for 150 units is anticipated for summer of 1985, with first delivery in Sep 85.

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